

THE WORLD'S BEST-SELLING APPLE MAGAZINE

Macworld

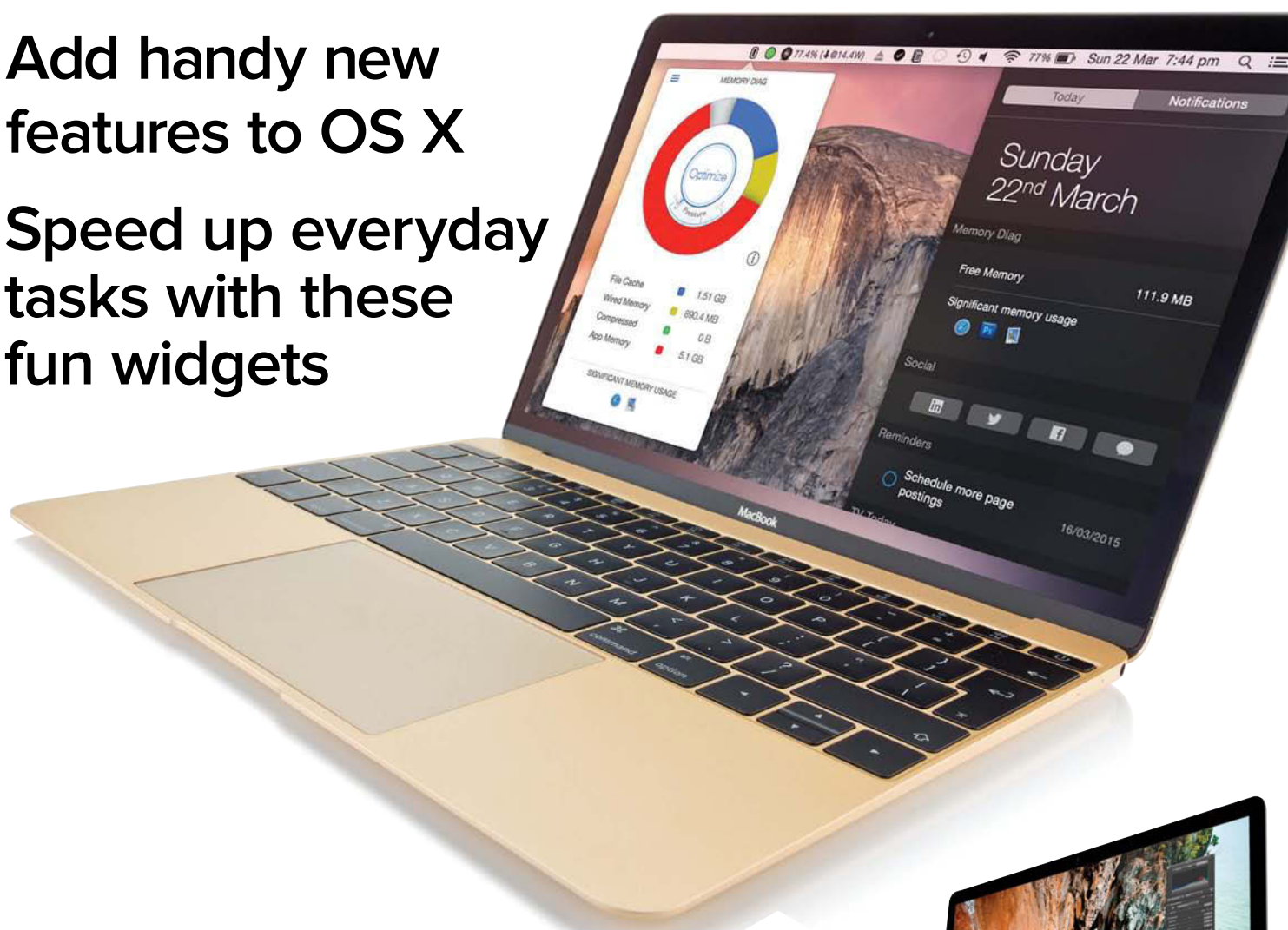
IDG

UNITED KINGDOM

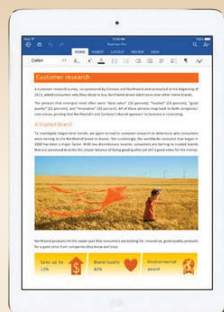
SUMMER 2015

BEST OS X EXTENSIONS

- Add handy new features to OS X
- Speed up everyday tasks with these fun widgets



Office
for iPad
Time-saving tips



New iMac
reviewed
+ 15 inch
MacBook Pro **TESTED**



NEXT GENERATION 1&1 CLOUD SERVER

TRY FOR 1 MONTH – FREE!
Then from only £9.99 per month*

Powered by  Cloud
Technology

EASY TO USE – READY TO GO

The new 1&1 Cloud Server offers all the advantages of dedicated hardware performance combined with the flexibility of the cloud!

FLEXIBLE & AFFORDABLE

Customised configuration

- SSD, RAM and CPU can be adjusted independently, flexibly and precisely
- **NEW:** Pre-configured packages available



Transparent costs

- Billing by the minute
- Clearly structured cost overview enables efficient planning and management
- No minimum contract term

EASY & SECURE

1&1 Cloud Panel

- Innovative, user-friendly interface with smart administration

Security

- Built-in firewall to protect your server from online threats
- Backups and snapshots to prevent accidental data loss
- High-performance 1&1 Data Centres are among the safest in Europe

ALL-INCLUSIVE

Top performance

- Unlimited traffic
- Setup in 55 seconds
- Premium SSD with the highest possible performance
- Private networks, professional API, load balancers, firewalls and more, all easy to configure
- Ready-to-use applications including WordPress, Drupal™ and Magento®



☎ 0333 336 5509

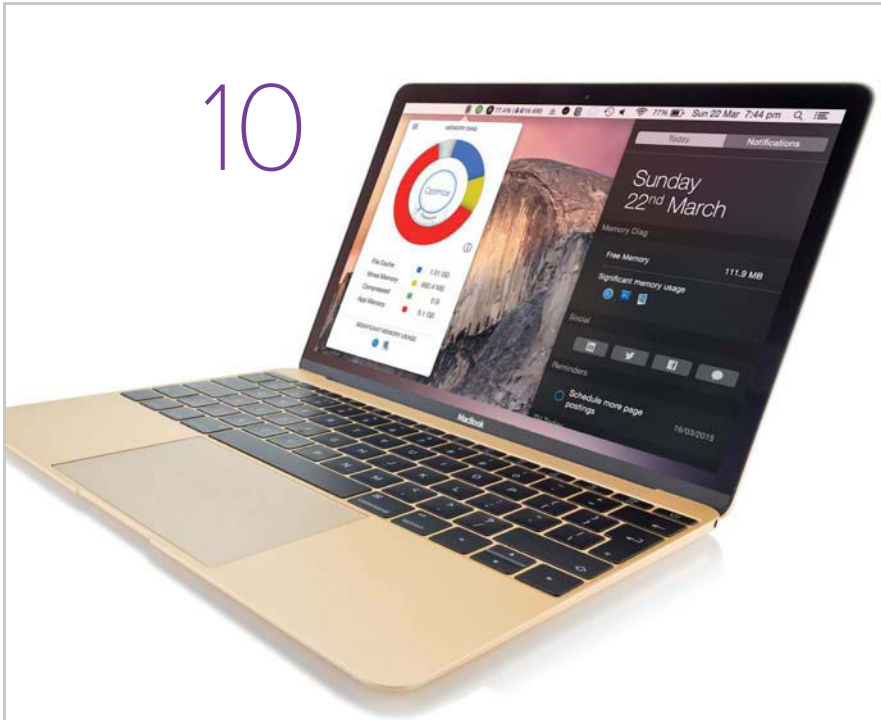
*1&1 Cloud Server 1 month trial, then from £9.99 per month. No setup fee. Prices exclude 20% VAT. Visit www.1and1.co.uk for full offer details, terms and conditions. Windows is a registered trademark of Microsoft® Corporation. Linux is a registered trademark of Linus Torvalds. Intel and the Intel logo are trademarks of Intel Corporation in the U.S. and/or other countries.

1&1
1and1.co.uk

Macworld Contents

SUMMER 2015

10



5 Karen Haslam
A WWDC to remember

6 News
All the news from WWDC 2015

10 OS X Yosemite extensions
Boost your productivity with extensions

15 OS X Yosemite Spotlight
Locate what you need in Spotlight

18 Safari extensions
A selection of our favourites

21 System Preferences
Part two of our complete guide

29 Solve internet issues
What to check when things go wrong

31 USB-C
Everything you need to know

34 USB-C cables and adaptors
We test the first batch of cables

36 Share a Mac's screen
Share a screen when things go wrong

38 Utilities folder
In praise of OS X's unsung heroes

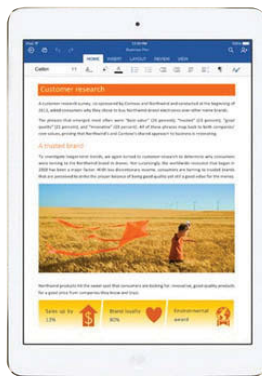
40 Everything is broken
When everything goes wrong

43 Spotlight: Jason Snell
Maybe the Mac is a typewriter

44 Terminal on Mac
Get more from your Mac with Terminal



21



82



48

Macworld Contents

46



46 Reviews

- 46 Apple 15in MacBook Pro with Retina display (2.5GHz, mid 2015)
- 48 iMac with Retina 5K display (mid 2015)
- 50 Apple Watch
- 52 Final Cut Pro X 10.2
- 53 Adobe Slate
- 54 FileMaker Pro 14
- 56 CleanMyMac 3
- 57 Fantastical 2
- 58 Moments Wide Lens and Tele Lens

60 Help Desk

Your tech questions answered

66 Which Watch?

How to pick the right Apple Watch

69 Apple Watch tips

How to set up your Apple Watch

72 Spotlight: Michael Simon

Bright future for Apple Watch apps

74 Apple Watch gaming

Developers talk early challenges

76 Apple Watch games

10 games that will keep you hooked

78 Spotlight: Glenn Fleishman

Apple Watch security



80 New and noteworthy

Best new kit for your iOS device

82 Tips for Office iPad

Time-saving tips for Microsoft's app

84 Calendar tips for iOS

Get more from the Calendar app

86 Ripping DVDs

How to rip a DVD with subtitles

88 Messages and FaceTime fixes

Solving five biggest annoyances

90 Spotlight: Michael Simon

How to stop decline in iPad sales

92 Buyers' Guide

The best hardware and software

114 Spotlight: Simon Jary

Jony Ive's new role

contact...

EDITORIAL

Editor Karen Haslam	karen_haslam@idg.co.uk
Engagement Editor Ashleigh Allsopp	ashleigh_allsopp@idg.co.uk
Staff Writer Lewis Painter	lewis_painter@idg.co.uk
Online Editor David Price	david_price@idg.co.uk
Group Managing Editor Marie Brewis	marie_brewis@idg.co.uk
Art Director Mandie Johnson	mandie_johnson@idg.co.uk
Production Editor Rob Woodcock	rob_grant@idg.co.uk
Multimedia Editor Dominik Tomaszewski	dominik_tomaszewski@idg.co.uk
Technical Editor Andrew Harrison	reviews@idg.co.uk
Consumer Tech Editor Chris Martin	chris_martin@idg.co.uk
Associate Editor Neil Bennett	neil_bennett@idg.co.uk
Associate Editor Jim Martin	jim_martin@idg.co.uk
Editor-In-Chief Matt Egan	matt_egan@idg.co.uk

Contributors

Chris Barylick, J R Bookwalter, Christopher Breen, Jason Cipriani, Glenn Fleishman, Craig Grannell, Andrew Hayward, Kenny Hemphill, Cliff Joseph, Kirk McElhearn, Caitlin McGarry, Jared Newman, Christopher Null, Susie Ochs, Ben Patterson, William Porter, Emily Price, Oscar Raymundo, Chris Roberts, Michael Simon, Jason Snell, Keir Thomas, Leah Yamshon

ADVERTISING

Business Director Helen Clifford-Jones	helen_clifford-jones@idg.co.uk
Account Director Tom Drummond	tom_drummond@idg.co.uk
Account Director Jonathan Busse	jonathan_busse@idg.co.uk
Senior Account Manager Dave Lees	dave_lees@idg.co.uk
Campaign Support Manager Chris Brown	chris_brown@idg.co.uk

MARKETING

Marketing Manager Ash Patel	ash_patel@idg.co.uk
Head of Marketing Design James Walker	james_walker@idg.co.uk
Affiliate Manager Letitia Austin	letitia_austin@idg.co.uk

FINANCE

Financial Director Chris Norman
Credit Controller Dawnette Gordon
Purchase Ledger Clerk Vicky Bentley
Management Accountant Parit Shah

PUBLISHING

Publishing Director Simon Jary	simon_jary@idg.co.uk
Managing Director Kit Gould	



Macworld is published by IDG UK
IDG UK, 101 Euston Road, London NW1 2RA. Tel: 020 7756 2800
Printer: Wyndeham Press Group Ltd 01621 877 777
Distribution: Seymour Distribution Ltd 020 7429 4000

No material may be reproduced in whole or part without written permission. While every care is taken, the publisher cannot be held legally responsible for any errors in articles, listings or advertisements. All material copyright IDG UK 2015



A WWDC to remember

Apple unveils OS X El Capitan at WWDC 2015, along with iOS 9 and WatchOS 2

I'm writing this page the day after Apple took to the stage at WWDC to announce its plans for OS X, iOS and WatchOS. The *Macworld* team had a busy evening writing all about the announcements over on Macworld.co.uk and now that the dust has settled on the news, the implications of what we heard are starting to sink in. Based on what we learned from the WWDC keynote, Apple has some fantastic new features coming for OS X, iOS and the Watch.

To summarise the highlights:

Apple Music will let you stream your entire iTunes library (that's 30 million songs) for \$9.99 a month (we're still waiting for the UK price). You will be able to tune into Beats 1, Apple's answer to Radio One, headed up by DJ Zane Lowe.

The new OS X will be called El Capitan, after the rock formation at Yosemite. In the same way that OS X Snow Leopard built on OS X Leopard, El Capitan will build on Yosemite, focusing on security enhancements and system fixes. It will also offer various new features such as improved Spotlight search, a new SplitView in full screen mode, new minimise and tab options in Mail, and a revamped Notes app.

Gamers and anyone who uses Adobe apps will see performance improvements thanks to Apple's decision to bring Metal to the Mac. Metal is the Graphics technology announced with iOS 8 and it will bring improved detail and game performance as well as improved performance in processor hungry apps.

Like OS X, iOS 9 will principally enhance existing features rather than introducing new ones. For example, battery life should improve with the iPhone 6 running for an extra hour on iOS 9, and there will also be a new low power mode that should extend battery life by up to three hours.



iPad users get the real iOS 9 highlights, though. iOS 9 will bring true multitasking to the iPad, with Split View allowing users to open two resizable windows on the screen at once. There's also a new picture-in-picture feature allows users to play a video from one app while using a different app. The iPad keyboard gets new QuickType shortcuts for formatting text and accessing attachments. The keyboard also turns into a trackpad when you place two fingers on it so you can select text and move objects around as if you were using a mouse.

Siri is getting intelligent. In iOS 9, Apple's personal assistant will be more contextually aware, learning from your habits and making recommendations based on them. Siri will also be able to interpret natural language commands.

And there's more: Apple Pay is coming to the UK in July and will work with about 70 percent of all UK credit and debit cards in more than 250,000 locations. It will even work on the Tube and other elements of Transport for London.

Maps is, hopefully, getting a boost that might make up for its embarrassing launch that it has never recovered from. Maps will finally offer transit directions, at

least in London, so you will be able to navigate home via the train and tube without having to open Google Maps.

Finally, there's WatchOS 2, coming in the autumn and bringing with it new Watch Faces, TimeTravel – a way to see upcoming events and weather from your Watch Face by scooting forward in time using the Digital Crown, the ability to reply to emails and conduct FaceTime Audio calls. Developers will also be able to design apps that run independently on the Watch – currently apps run on the iPhone but data is sent to the Watch, which means they need an iPhone to run.

Developers will also be able to take advantage of the Apple Watch hardware, accessing the microphone and accelerometer, play audio via the built-in speakers and utilise the Digital Crown. For fitness fanatics, the best news is that your third-party fitness apps will run on the Watch without a paired iPhone, and their data will feed into the Watch's Activity reports.

Perhaps the most exciting element of the announcements is that users won't have to wait until the autumn to try out the new features on their Macs and iOS devices. This year Apple is running a beta program for members of the public – not just for OS X as it did last year, but also for iOS 9. This means that if you are happy to be a beta tester (which will mean buggy software and the possibility of your Apple device not working properly) you may be able to get your hands on the software in July.

Apple's decision to open up the beta software to the public will give Apple an unprecedented number of beta testers, which should allow Apple to tweak and overhaul the software rapidly, and avoid embarrassing issues emerging after the software goes live. We can't wait to start trying it all out.

News



Apple reveals OS X 10.11 El Capitan

New operating system promises better speed and other upgrades

BY GLENN FLEISHMAN

Apple has brought Yosemite to the mountain: El Capitan, specifically, which is the name of OS X 10.11 as well as a peak in Yosemite National Park. Revealed on 8 June at Apple's Worldwide Developers Conference, the release is intended to reach a higher point, but not dig new ground.

Craig Federighi, Apple's senior vice president of software engineering, emphasised that the release is about an improvement in experience and performance. El Capitan's announcement focused on small points of irritation and big bumps in efficiency.

Safari adds pinning, letting users keep particular pages readily available. The sites will be regularly updated in the background to keep them up to date. In a feature that received plenty of applause from the audience, Safari will now make it easy to reveal which tab is playing music, and let audio be muted with a single click on its tab. The browser can now push web video to Apple TV as an isolated stream, showing just that content and not the entire desktop.

Apple emphasised new gestures, such as swiping left in Mail to reveal a Delete button that can be tapped. In Mission Control, a three-finger upward swipe reveals every desktop window in a single layer. Any window in Mission Control can be dragged to the top of the screen to a new desktop space.

Federighi also showed off a new option in Mail for hiding windows within the app without minimising them. Switch to the inbox minimises a message you're composing to the bottom of the screen with its window bar showing. An image can be dragged from a message being viewed onscreen into the docked window. Mail also provides better hooks into calendars and contacts, and allows tabbed windows to manage different email threads.

The new release provides better options for working among multiple apps with improved use of full-screen mode, especially with 16:9 ratios and similarly broad monitors. Clicking and dragging the green window-resize button activates Expose to show other available apps. Drop on to another app, and El Capitan creates a full-screen, side-by-side working view of both.

Little features also receive small and large tweaks. The Spotlight results window can be resized and moved. It also encompasses more up-to-date information, including weather, video results from the internet, transit information, and, Apple's constant on all platforms, Stocks.

The Photos app now supports third-party editing tools, and will sport minor interface improvements that Yosemite users will seemingly have to wait for and upgrade to get. Geotagging,

available in iPhoto and absent in Photos 1.0, will return in Photos for El Capitan, as well as better handling of Faces.

Wiggling one's finger on a trackpad or shaking a mouse enlarges the cursor on screen to make it more easily visible, useful on a Retina screen for which a higher-density display option was chosen. Maps adds long-awaited transit directions, which can be pushed to an iPhone. And the old standby Notes gets a refresh. It can now handle media, URLs, and map locations alongside text, and sync via iCloud across all iOS and OS X devices that use the same account.

Apple also emphasised performance improvements to address ongoing complaints about delays, spinning cursors, and other odd lags in speed in Yosemite, sometimes in comparison to previous releases of OS X.

On the graphics side, Apple is bringing its Metal framework to OS X, making graphics rendering 40 percent more efficient. For games, drawing performance can be 10 times faster.

On the professional production side, Federighi said Adobe was able to pull an eightfold improvement in After Effects rendering. Adobe is committed to adopting Metal across its OS X apps.

The new version is available to developers now, and in public beta in July. It will ship to users this autumn as a free upgrade.

iOS 9 announced at WWDC 2015

Apple makes Siri more intelligent, adds transit maps and a new News app

BY OSCAR RAYMUNDO

Siri is about to get much, much smarter. On 8 June during WWDC's keynote, Apple CEO Tim Cook revealed new enhancements to iOS 9, calling it "the world's most advanced mobile operating system." Among the key features are a major Siri update, deep-dive transit Maps, and a ton of useful user-experience improvements.

Siri will now be able to pull up photos and videos stored on your device. It becomes a smarter assistant by looking at how you use your iPhone at any given moment and recommending ways for you to use it next, interpreting a natural language into commands. For example, when you're looking at a web page on Safari, you can create a Siri reminder by saying "Siri, remind me about this later," and Siri will then refer back to the page you are browsing.

Furthermore, Siri has become a 'proactive' assistant that analyses information about your daily habits, taking into account your location, the time of day, the app you're viewing and what other devices you have connected – all in order to better anticipate your next move. When you plug in your headphones, for example, your iPhone will launch your Music app and display your most recently listened to track on the lock screen. And when you connect your iPhone to your car, Siri will suggest the audiobook that you've been listening to on your commute, presumably through CarPlay. This new, more intelligent Siri also takes event invites you receive in Mail and automatically creates events in Calendar.

Searching iOS 9 will also be more efficient, thanks to a new and improved Spotlight. It will support video search from Vevo, Vimeo and YouTube, and you will be able to play videos directly from the search results. A new Spotlight search API will also allow developers to yield search results with deep-links to their app. Using Spotlight to search for a

recipe, for example, will surface search results from food recipe apps and take you right to the appropriate recipe within the app.

iOS 9 replaced Passbook with Wallet, a new native app that will store your Apple Pay information as well as credit and debit card information from your bank and rewards cards from various retailers.

Apple Pay is coming to the UK in July, with several thousand partners already on board, including Transport for London.

Avid note-takers will have an easier way to jot down their thoughts using Notes. In iOS 9, Notes supports graphical links and a quick way to turn your notes into interactive to-do lists where you can check off various tasks.

Apple Maps will finally support transit directions and full-featured transit maps, launching with iOS 9 as well. To start off, Maps' transit service will be available in 10 major cities, including London. It will also incorporate more information from local businesses, including whether or not they accept Apple Pay.

Another native app switch-off, News will replace Newsstand. News is a customisable digital magazine, and Apple recruited publishers such as Conde Nast to create an interactive reading app. News showcases content from these publishers in a beautiful interface that can play slideshows and video.

For the iPad, iOS 9 brings new features to make it easier to compose and edit text. The QuickType keyboard improves the suggestion bar by adding shortcuts so that you're able to format text and access attachments in a seamless way. The one key feature of QuickType is the ability to turn the iPad's



touchscreen into a trackpad by putting two fingers down on the screen, this way you can drag selected text around.

iOS 9's new Slide Over feature is another iPad-only enhancement aimed at productivity, allowing you to work within two apps at the same time. This secondary app launches along the right-hand side of the iPad, and gets pinned to the side regardless of which app you open to be your primary app. For example, you can browse Safari and use Notes simultaneously, pinned as a slide-over app on the side.

Another new feature of Multi-Tasking on the iPad is the picture-in-picture. If you're watching a video but want to access another app, you can minimise the video screen, resize it, and drag it to another place on screen, which allows you to keep an eye on the video while using another full-screen app.

Of course, iOS 9 ushers in several all-round improvements and fixes, too. For example, a new low-power mode is said to extend battery life by three hours. And to beef up security, Apple is introducing two-factor authorisation on-device and on the cloud.

iOS 9's developer beta is available now, and its public beta will be available July. The full version will be released to masses as a free upgrade this autumn.



Apple unveils music streaming service

Apple Music is coming later this month with the iOS 8.4 update

BY CAITLIN MCGARRY

Apple's long-awaited new streaming-music service, Apple Music, isn't just a shot at Spotify, which has 60 million active users. The new app challenges the way people get songs from Apple itself, which has long placed a high premium on its iTunes digital download storefront and emphasised how that platform revolutionised the music industry.

The service, unveiled during WWDC 2015's opening keynote, takes iTunes to the next level by making 30 million of the expansive catalogue's songs streamable. That's millions of songs on demand, right alongside the music you already own.

Then there's 'For You', a recommendation tool that serves up songs and artists based on the genres of music you tell Apple Music you like. You can use Siri to call up a song or playlist and immediately launch it in Apple Music,

even if you don't know the exact name. "Play that song from *Selma*," for instance, calls up John Legend's *Glory*.

Apple Music has the standard streaming service features and it has the standard streaming service price tag: \$9.99 per month, or \$14.99 for families with up to six people (we expect £9.99 and £14.99 for the UK). But unlike Spotify, Apple Music will feature a 24/7 live radio station, Beats 1, anchored by three DJs based in New York, Los Angeles and London. Former BBC Radio One DJ Zane Lowe will lead the effort.

Every listener around the world will hear the same handpicked songs, plus celebrity interviews, pop culture news and other musical nuggets.

Then there's Connect, a social networking feature that lets fans follow artists. Hip-hop star Drake was at WWDC to talk about how he'll use Connect to

share snippets of his current album, behind-the-scenes photos of his life, and other content his following will love.

Pandora, Spotify, Rdio and other streaming services paved the way for Apple to wade into streaming by making people realise they didn't need to own songs to enjoy them. Apple certainly isn't reinventing the wheel with Apple Music, which takes pieces of Beats Music and iTunes Radio and blends them. But there were other MP3 players before the iPod, none of which perfected the means by which we buy and listen to music.

Apple Music debuts on 30 June on iOS, OS X and Windows PC worldwide, and there are plans to open the doors to Apple TV and Android users in the autumn. The company is offering a free three-month trial period to give you a taste of what Apple's take on music streaming is all about.



WatchOS 2 shown off by Apple

Apple Watch apps will get much more useful with WatchOS 2

BY JARED NEWMAN

Apple is removing the training wheels for Apple Watch app makers, letting them take full advantage of the device's hardware.

Currently, apps can't function without a paired iPhone, which handles not just internet connectivity but core functions such as the app's logic. These apps also can't tap into key hardware features such as the microphone, motion sensors, the heart monitor and the Digital Crown.

All of that is going to change now that Apple is allowing native app development on the Watch. The new apps should start to arrive this autumn, alongside the release of WatchOS 2 and iOS 9.

The Apple Watch is an exquisite piece of hardware, but one that can be extremely frustrating to use. Users are frequently confronted with loading screens, as third-party apps struggle to load everything they need from a pair iPhones. And when these apps finally load, most of them are of limited utility. The new powers that Apple is granting to app makers, along with some added features in WatchOS 2, should go a long way toward turning the Apple Watch into a useful accessory.

By moving the app logic from the iPhone to the Watch, apps should have faster load times. The Watch will also be able to connect to known Wi-Fi networks, so apps, so apps that depend on an internet connection can work even without an iPhone in Bluetooth range.

Apps will be able to play audio through the Watch's built-in speaker, record audio through the microphone, detect motion from the accelerometer, and read the heart-rate data.

Developers will be able to use the Digital Crown for custom app controls, such as dials and scroll bars. They can also create custom sound and pulse alerts with the Taptic engine.

Third-party fitness apps will run on the Watch without a paired iPhone. The data from these apps can feed into Apple's daily activity reports, and can integrate with Apple's HealthKit framework.

Straight from the watch face, users will be able to glance at information from third-party apps, such as sports scores, flight information and smart home status.

Apple isn't just relying on app developers to make the Apple Watch more useful. It's also adding some of its

own new features in WatchOS 2. The watch face, for instance, will allow for custom photos and slideshows, along with Apple-made timelapse images of popular cities. In a nod to the Pebble Time, watch faces with Complications will also let users scroll on the Digital Crown to see information from the past or future. There's also a new night-time mode that displays an alarm clock when the watch is resting on its side.

On the communications front, users can add people to the contacts dial, create Digital Touch sketches in multiple colours, reply to emails, and conduct FaceTime Audio calls. Users will also be able to share their workout achievements and medals over Facebook and Twitter.

Some features from iOS 9 are making their way to the Watch as well, including transit directions and loyalty cards for Apple Pay. Siri is also getting some new powers, including a way to initiate workouts, jump directly to Glances and control HomeKit devices with prompts such as "set the dinner scene."

As with all software updates, WatchOS 2 will be free, though Apple hasn't given an exact release date aside from autumn.

HOW TO USE OS X Yosemite's extensions

EXTENSIONS WILL OFTEN JUST APPEAR AS NEW FEATURES WITHIN INDIVIDUAL APPS – SUCH AS THE MARKUP FEATURE THAT WAS INTRODUCED WITH THE LATEST VERSION OF MAIL – AND YOU MAY NOT EVEN REALISE THAT YOU'RE USING AN EXTENSION. SO IT'S WORTH TAKING A CLOSER LOOK AT HOW EXTENSIONS WORK, AND SOME OF THE BEST APPS THAT CURRENTLY USE EXTENSIONS ON THE MAC

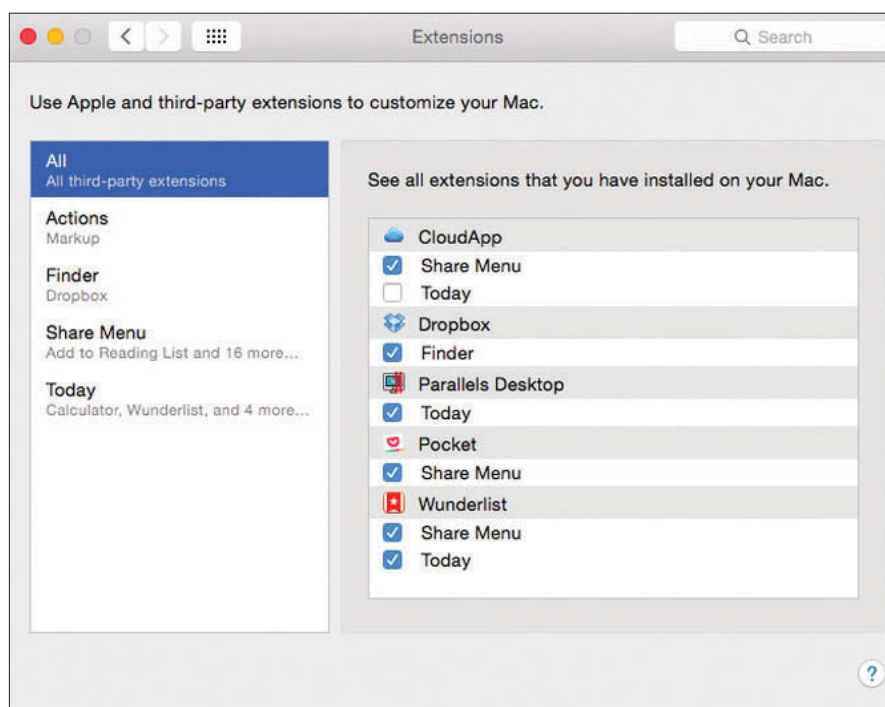
By Cliff Joseph

Extensions Preferences

There are four different types of extensions available on the Mac – some of which are more widely used than others. You can see which extensions are installed on your Mac by taking a look at the Extensions preferences panel that was introduced as part of Yosemite.

The extensions shown in the preferences panel are organised into four categories – Actions, Finder, Share Menu and Today. Extensions – also known as 'widgets' – are perhaps the most popular form of extension at the moment, as they can be used to display messages and updates in the Notifications Centre on your Mac desktop.

The weather reports, stock prices and other notifications that are automatically shown in the Notifications Centre are all controlled by extensions that are built into Yosemite. If you don't want to see some of this information then you can use the preferences panel to turn individual



extensions on or off. There are other extensions also included in Yosemite that

aren't used by default, but which can be turned on whenever you want.

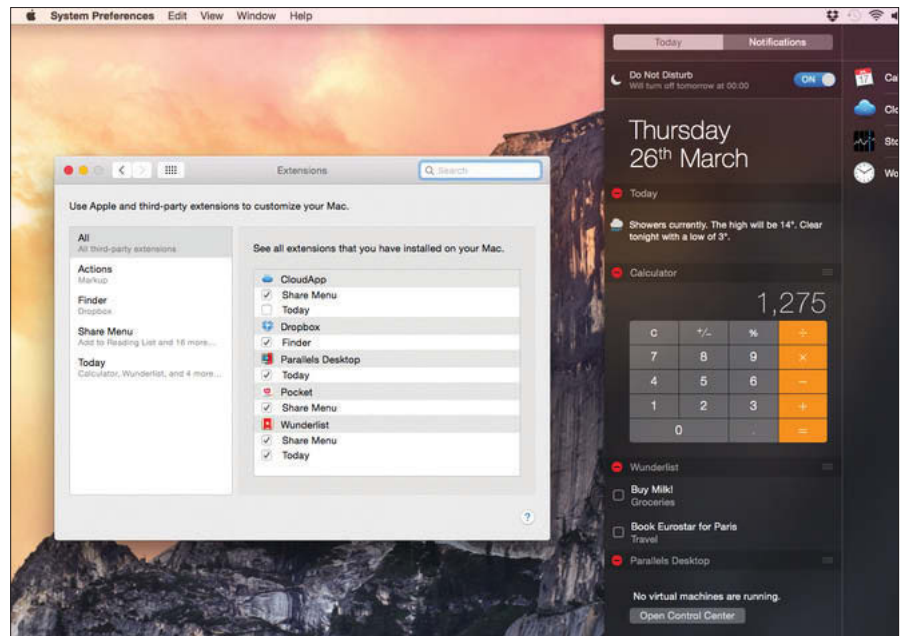


Today Extensions

I use the Calculator app on my Mac a lot, and it turns out that the Calculator can be used as an extension too. I'm not that interested in stock prices, so I can turn off the Stocks extension in order to make room for the Calculator, and then I can do a few quick sums right in the Notifications Centre whenever I need to.

You can turn any of these extensions on or off in the Extensions preferences panel, and use the Edit option in Notification Centre to modify the layout of information and keep everything tidy.

There are plenty of third-party apps that use Today Notifications too, including the popular PCalc, which provides far more powerful calculator features than Apple's basic Calculator app. One of my favourites is Wunderlist, which is one of the best To-Do apps available for the Mac. It includes a Today extension that allows me to view reminders for my To-Do tasks without needing to open the Wunderlist app itself.



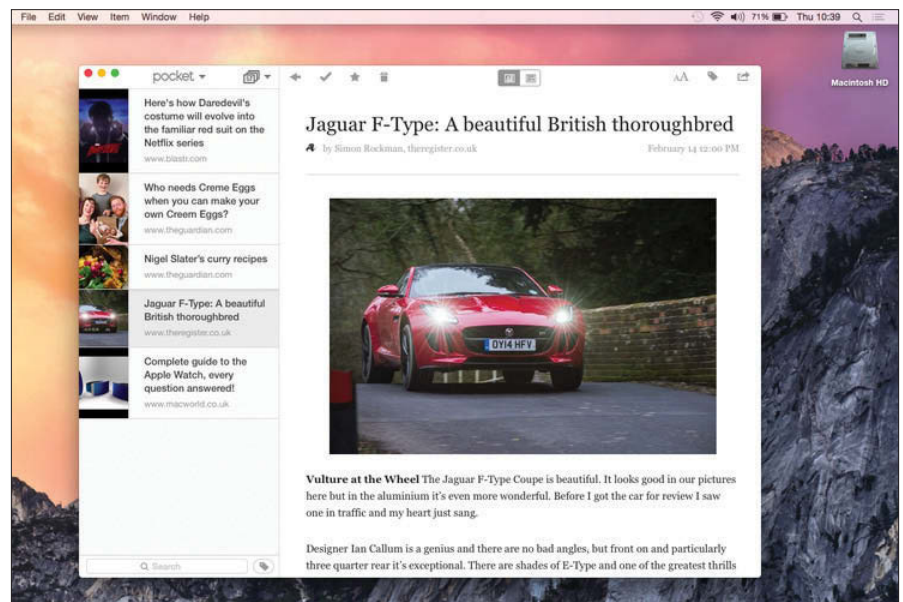
I've also got a Today extension for Parallels Desktop that monitors the state of my Windows virtual machines. Philips has even demonstrated an extension that lets you control its Hue lighting systems directly from within Notification Centre.

And if you press the Edit button at the bottom of Notification Centre you'll see another button that takes you to the Mac App Store where there's a whole collection of apps that provide extensions you can use.

Share Extensions

Many of Apple's own apps, such as Safari and iPhoto, now have a Share menu that allows you to send photos and files to your friends using Mail or Messages, or to upload them to social media sites such as Facebook and Twitter. There's also a Share option built into the Finder too, allowing you to ⌘-click on a file and share it right from your Mac desktop.

Yosemite extends the Share menu by using extensions to add other apps and social sites to the menu. Any social media service can provide a Share extension of its own, and it will then be added to the Share menu so that you can share files and information online. Look in the Extensions preferences panel and you'll see the standard set of extensions for the likes of Twitter and Facebook, but – with an eye on the Chinese market – Apple has included extensions for Chinese video-sharing services such as Youku.



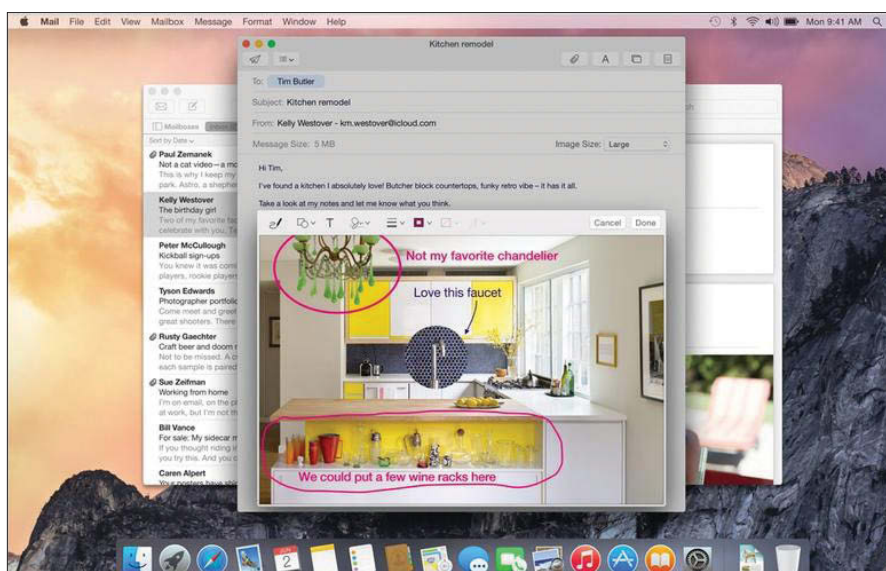
There are also some great third-party apps that provide Share extensions, such as Pocket, which allows you to quickly copy web pages, photos and other files straight into Pocket and view them offline

later on. The handy file-sharing service CloudApp has a sharing extension too, so you can upload and share files right from the desktop by ⌘-clicking on the file and using the Share menu in the Finder.

Action Extensions

Action extensions allow you to edit or modify files in some way. One of the big additions to Mail in Yosemite is the Markup option that lets you annotate photos and PDF files, and even to add create a digital signature using your FaceTime camera. In fact, most of those Markup tools were already available in Preview, but Apple turned them into an extension for Yosemite so that they could be shared with Mail and other apps.

The Markup extension is also available within any other app that has been written to work with extensions, such as TextEdit. We've not come across any third-party apps that can use Markup at the moment, or which use Action extensions to add new features to apps, but this type of extension is starting to

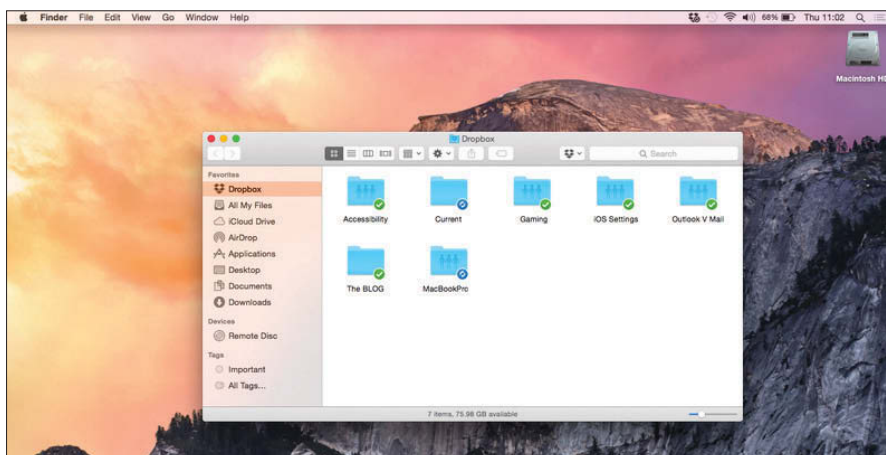


become popular with iOS apps, so maybe the Mac will catch up soon.

Finder Extensions

The final category is called Finder extensions, or sometimes 'Finder Sync'. This is a specialised type of extension that can monitor the sync status of files on your Finder desktop.

The latest version of Dropbox includes a Finder extension that puts a green tick by the name of any file or folder, so that you can instantly see when it has been fully uploaded to your Dropbox account without having to launch the Dropbox app itself.



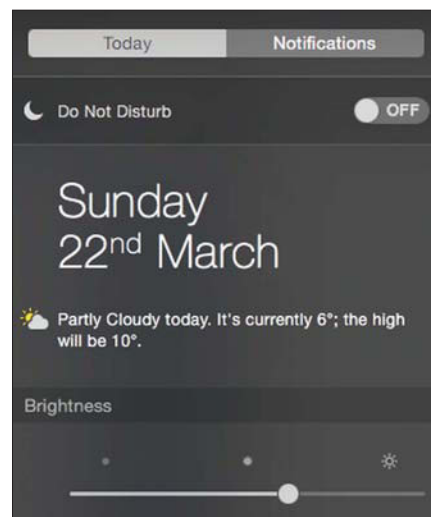
10 TOP YOSEMITE EXTENSIONS

EXTENSIONS, CAN BE USED TO ENHANCE NOTIFICATION CENTER'S TODAY SECTION, THE SHARE BUTTON SYSTEM, THE FINDER AND ANY APP THAT ALLOWS ACTIONS. HERE ARE 10 OF THE BEST. BY KEIR THOMAS

Brightness Widget

Available in the Mac App Store for £3.99, this widget extension not only lets you control the brightness of your Mac's display from Notification Centre and the menu bar, but it also adjust the overall colour balance to reduce blue tints.

The idea is that using your screen late at night means your circadian rhythms, which respond to daylight-like colours, get screwed up. In other words, using the Brightness Widget could mean that you sleep better.

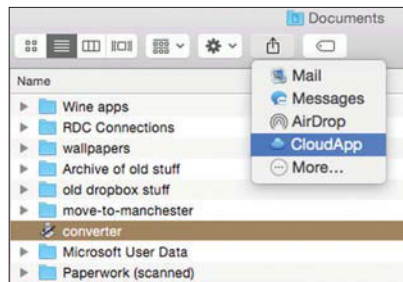




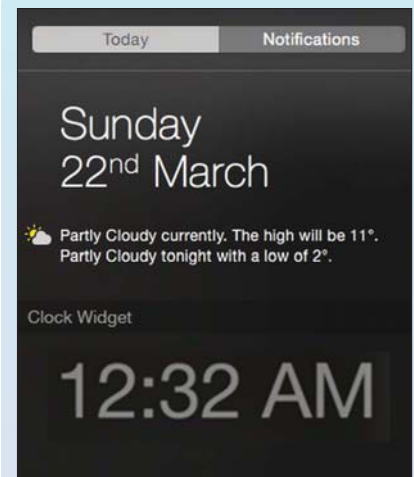
CloudApp

Cloud storage is ideal for sharing things with colleagues or friends, but it's a chore uploading something and then generating a URL so others can grab it.

Available in the App Store for free, CloudApp is one solution that integrates with the OS X Sharesystem, so you can instantly share files from apps like Finder or Preview, or via a menu bar icon. Once you do a URL is automatically added to your clipboard



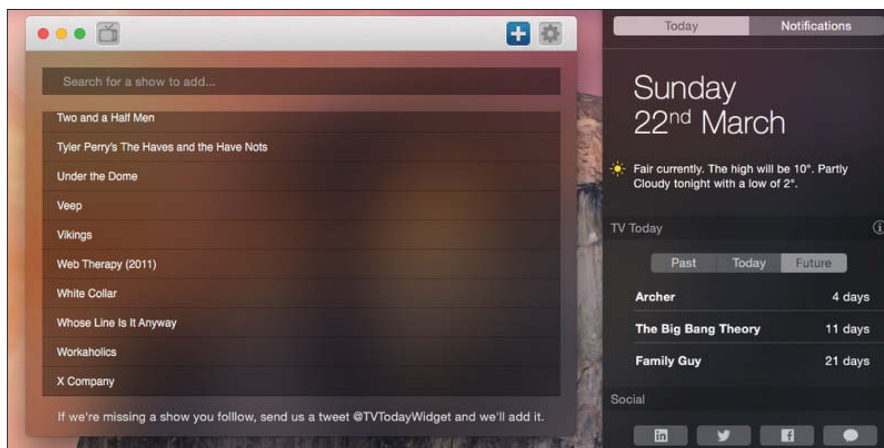
for pasting into emails or iMessage. You can subsequently monitor access to the shared file within Notification Centre.



Nice Clock

Although the Notification Centre includes a World Time widget, there's no way of quickly viewing the time in a big, friendly way, as you can with the date. As you might have guessed, Nice Clock fixes this – priced £2.29 from the Mac App Store.

You can set one of three styles of clock and more are being developed by the developer. Even better, using Nice Clock means you can turn off the system clock in the menu bar, making more space to menu bar icons (an option you'll find via *System Preferences* → *Date & Time* → *Clock*).



TV Today

How long until the next episodes of your favourite TV shows are broadcast? That's the itch TV Today scratches (£2.29 in the Mac App Store).

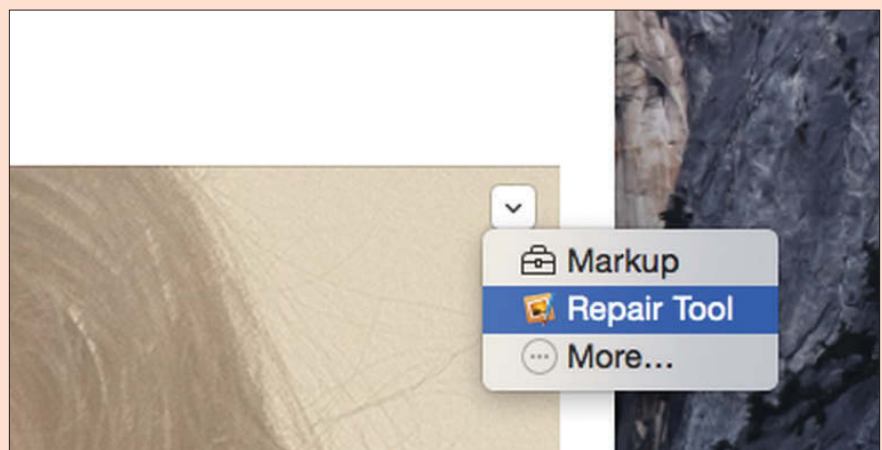
It appears in Notification Center showing what's being broadcast today, what's coming up soon, and dates for the most recent broadcasts. The app aims to track mainly when internationally popular

shows are first broadcast anywhere in the world, and is US in origin.

In other words, you can track *The Big Bang Theory* and *Family Guy*, but not *Songs of Praise*. However, popular UK shows such as *Doctor Who* are included. TV Today is perhaps of most use to those who download or stream their television programmes.

Pixelmator

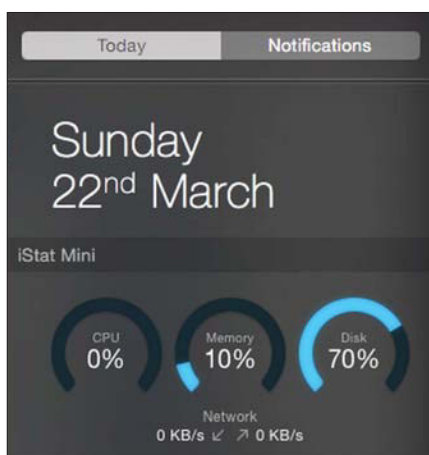
Pixelmator has been making waves for some time as an inexpensive yet powerful alternative to Adobe Photoshop. The latest version includes an Action extension that lets its clever repair tool be used outside of Pixelmator in apps such as Mail – anywhere the existing Markup tool is available, in fact. Perfect for quickly removing those pimples on family snapshots you're emailing. Note that only the Mac App Store version of the app, available for £22.99, features the extension.



iStat Mini

The Dashboard is dead. Long live Notification Centre. While Apple might not be as blunt, this is undoubtedly the case in Yosemite and future releases of OS X, and iStat Mini (£2.29 in the Mac App Store) literally brings car dashboard-like dials to the Notification Center.

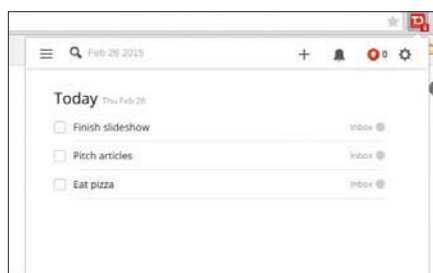
You're able to discover CPU load, the percentage of physical memory and disk that's free, and network activity (sent and received), all updated every second or so.



DockPhone

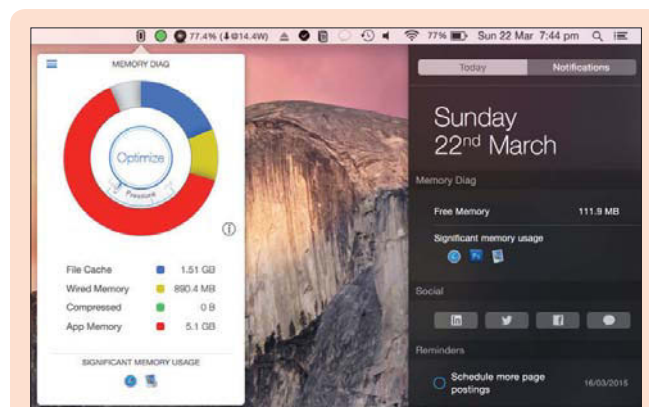
Introduced with OS X Yosemite is the ability to make phone calls if you've an iPhone signed into the same iCloud account.

DockPhone spins-out this feature into a dedicated app, along with a Notification Centre widget that allows quick-call access to the people you've most recently dialed (although not those you've recently called you, sadly). It's just 79p in the Mac App Store at the moment – a bargain.



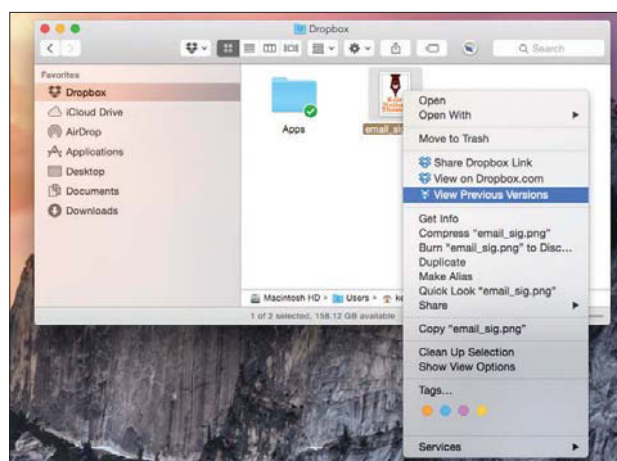
Todoist

If you are a fan of to-do lists, you can integrate yours into Notification Centre with Todoist. The free app is available for Mac, iPad and iPhone, so your job list can follow up everywhere. The app has a simple interface, and it's easy to flag up jobs according to priority using coloured flags. Unfortunately some of the best features, such as setting notifications, require the Premium version of the app, which costs £21.99 a year. However, even the free app lets you to mark off tasks in Notification Centre when you finish them.



Memory Diag

Like iStat Mini, Memory Diag adds an entry to the Notification Center to let you monitor memory usage, but with two major differences. First, you get to see which apps are particularly memory-hungry, and secondly, Memory Diag is free of charge in the Mac App Store. Run the app that's installed alongside the widget and you'll see a cool pie chart-style display of memory usage.



Dropbox

Dropbox has used the superpowers offered by an extension to add overlay icons indicating cloud syncing, plus sharing, linking and previous version look-up options on the right-click menu. It also adds an icon to the Favorites section of the Finder, and a toolbar button that you'll need to add by right-clicking the toolbar, selecting Customize Toolbar, and then dragging it over from the dialog box that appears.



HOW TO CREATE GOOD QUERIES IN YOSEMITE'S SPOTLIGHT

LOCATE EXACTLY WHAT YOU NEED IN SPOTLIGHT

Kirk McElhearn

On the surface, searching with Spotlight is pretty straightforward. But if your search involves multiple terms, or if you need to narrow down your results to dig up a particularly elusive file, knowing how to put together a good search query will pay off. By mastering a few simple tricks, such as using keywords to limit your search to specific dates, authors or file types, you can narrow down your search to specific types of data, exclude terms, and more, helping Spotlight to locate exactly what you need.

Using the right words

If you search for just one word in Spotlight, the results are pretty simple. But if you search for more than one word, things get a little bit more complex. Type `time machine` in the Spotlight search menu, and you'll get a list of every file containing both words.

Every Spotlight query is an AND search by default. This means the program looks for files containing all the words you type. This search will turn up any files that mention Yosemite's Time Machine backup feature, but also an IMDb search result for a film of that name, a Wikipedia article on time travel, an article I wrote a few years ago about using the command line to

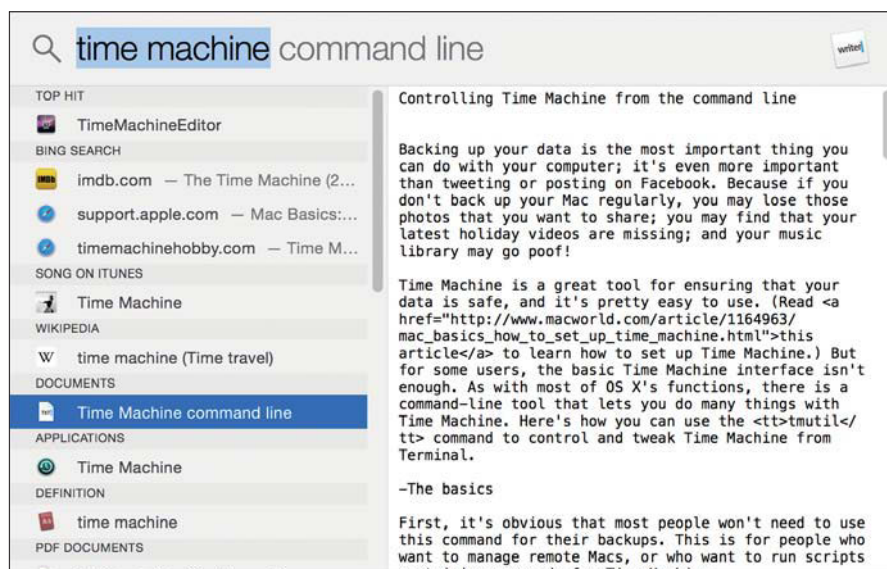
control Time Machine, but it may also find an email from a friend discussing the best time to swing by and fix a machine.

You can narrow down the search results by using quotation marks; this tells Spotlight that the words must appear next to one another. If you type `"time machine"`, Spotlight will look only for files that contain the exact phrase that you've typed inside the quotation marks. It will find `Time Machine.doc` and any file

containing the term `"time machine"`, but it will skip over your presentation on the evolution of machines through time. You don't even have to use both quotation marks; typing only the first one tells Spotlight that the words following it must appear together.

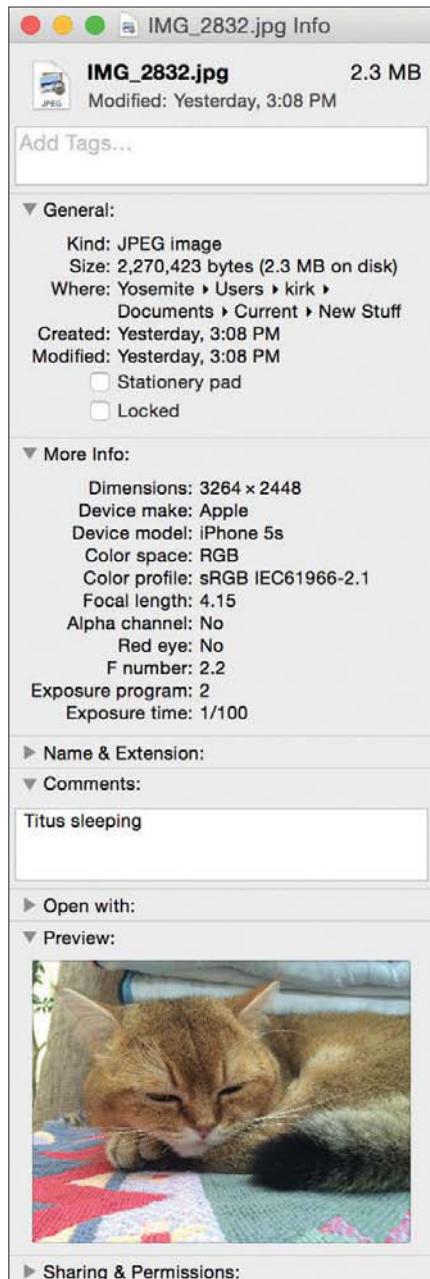
Use Metadata

In addition to scouring your files' names and contents, Spotlight peruses

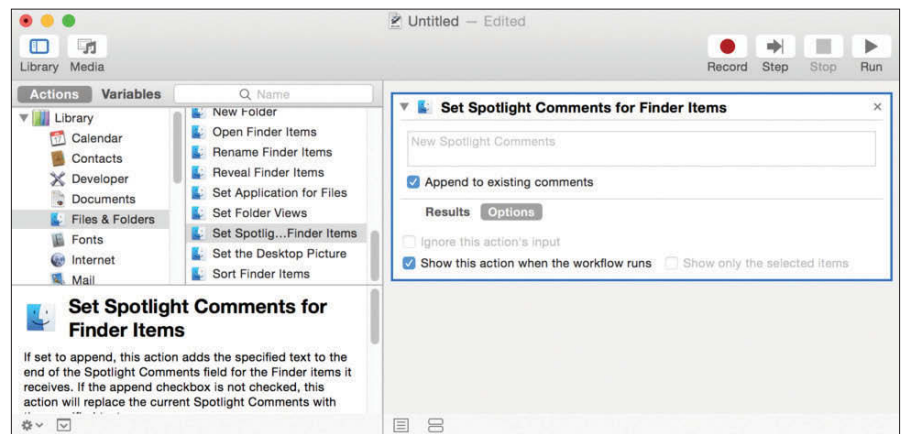


Type `"time machine"` in the Spotlight search menu, and you'll get a list of every file containing both words. If you use quotation marks around the term, you can limit the search to a much smaller group of files that contain the exact phrase `"time machine"`.

metadata; file information generated by the program or device that created the file. For example, a digital photo's metadata may include information about the camera used to take the photo and about how the photo was taken: the camera type, focal length, colour space, exposure time, and so on. If you want to find all photos taken with a certain camera, just enter its name or model



The Info window displays a number of interesting tidbits about this JPEG file, including the camera and the focal length used to capture the image. You can also add your own keywords, that you can later use as search terms, in the Comments field.



number in the search field. To see what sort of metadata a file is storing, select it in the Finder, press \mathbb{I} to open the Get Info window, and click on the triangle next to More Info. However, you're not limited to the metadata you see here. You can add your own keywords to any file. In the Info window, click on the triangle next to Comments. In the text field that appears, enter any keywords that might help you in future searches, such as the project the file is related to or the last name of a person you associate with it.

For example, by adding the comment HouseProject to any files having to do with the purchase and remodelling of your new home, you'll be able to find all

Adding Spotlight keywords doesn't have to be a hassle. This Automator workflow allows you to apply comments to dozens of files simultaneously.

- Click on Options, and enable the Show This Action When Workflow Runs option.
- Press \mathbb{S} to save the file, and choose to save it as an application.

To put your new Automator workflow to use, drag any files on its icon. A dialog box will appear, allowing you to add your comments to dozens of files at once.

Use Boolean searching

Spotlight also supports true Boolean searching, which uses logical operators (AND, OR, and NOT) to pinpoint results.

To help limit searches to certain file types or time periods, use one of the many useful keywords that Spotlight understands

those files with one easy search. It's a good idea to use 'HouseProject' rather than 'House Project' because that way Spotlight only searches for the single, uncommon word, instead of finding every file with the words 'house' and 'project'.

If you use this trick often, you may want to create an Automator workflow that lets you apply the same comment to multiple files at once. To do this:

- Launch Automator. Create a new document and select Service for the type.
- Select Files & Folders from the Library column.
- Drag Set Spotlight Comments For Finder Items from the Actions list to the workflow pane.

For example, if you type "time machine" OR morlock, you'll get references to Yosemite's backup tool, as well as any files related to H. G. Wells's fictional species.

To find files that include time machine but make no mention of H. G. Wells, type 'time machine' NOT Wells. When you perform a Boolean search, make sure to type operators in capital letters.

Take advantage of keywords

Even when you know what you're looking for, you may get an overwhelming number of search results. To help limit searches to certain file types or time periods, use one of the many useful



keywords that Spotlight understands. Place the appropriate keyword and a colon in front of your search term (but don't insert a space before the colon). Here how to take advantage of Spotlight's keywords.

Search for file names: If you know the name of the file you're looking for, you can limit your search to file names by using the name:keyword. For example, when you type name:machine, Spotlight will find only files that contain the word 'machine' in their names (though your search results may also turn up bookmarks, iCal events, and other items). As with regular search queries, you'll need to use quotation marks to identify phrases, such as, name:"time machine".

Find an author: If you can't remember the contents of a file but you know the name of the person who created it, you can try using the author:keyword. To look for a document written by your boss, Herbert, enter author:herbert in the search field. There's just one catch: Spotlight will find only files produced by programs that save this attribute, such as Mail, iChat, Word, Excel, Pages, Numbers, and a few others.

Check the date: Looking for a file that was created during a specific time period? Spotlight has a handle on dates. Typing date:today will bring up files you created, read, received, or opened today, including applications, if you have that category in your search results. You can also use the date:keyword with yesterday and tomorrow (for the latter, Spotlight can't tell which files you're going to use or create, but restricts its results to iCal events and to-do items).

You can also specify more parameters, such as whether a file was created or modified on a certain date, an exact date, or a range of dates. For example, you can type created:25/12/13 to find files authored on that date; this is a good way to find photos you took on a specific date. Type modified:<30/11/14 to look for files changed before that date; or type created:1/1/12-31/12/14 to locate files created between these two dates.

Search by kind: One of the most useful ways to narrow down a search is by using kind:keyword. This allows you to restrict

your list of results to a certain type of file. For instance, if you type time machine kind:pdf, Spotlight will pull up only PDF files containing the words time and machine. You can also limit your search to email messages, music files, System Preferences, applications, and more.

Spotlight can look for files created by specific applications, as well as certain file formats. Searching for

kind:mp3 or kind:tiff will find files in one of those formats, and searching for kind:pages or kind:powerpoint will show only documents created in one of those applications.

For a list of useful keywords, see My Kind of Keyword, below. But remember, for the keywords to work, you must have the appropriate categories enabled in Spotlight's preferences.

My Kind of Keyword

To Search for:	Use:
Aliases	kind:alias
Applications	kind:application, kind:applications, kind:app
Audio	kind:audio
Bookmarks	kind:bookmark, kind:bookmarks
Browser history	kind:history
Contacts	kind:contact, kind:contacts
E-mail messages	kind:email, kind:emails, kind:mail message
Folders	kind:folder, kind:folders, kind:fol
Fonts	kind:font, kind:fonts
iCal Events	kind:event, kind:events
iCal To-Do Items	kind:todo, kind:todos, kind:to do
Images	kind:image, kind:images
JPEG files	kind:jpeg
Keynote files	kind:keynote
Movies	kind:movie, kind:movies
MP3 files	kind:mp3
Music	kind:music
Numbers documents	kind:numbers
Pages documents	kind:pages
PDF files	kind:pdf, kind:pdfs
PowerPoint files	kind:powerpoint
Preference panes	kind:preference, kind:preferences
Presentations	kind:presentation, kind:presentations
QuickTime files	kind:quicktime
TIFF files	kind:tiff
Word documents	kind:word

Related: [Spotlight](#) [Search](#)

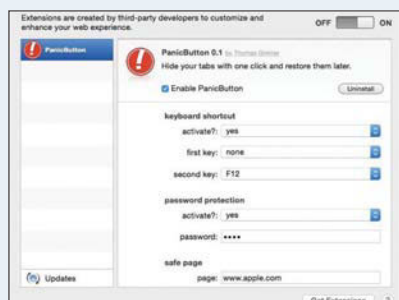
9 COOL EXTENSIONS FOR SAFARI

THERE ARE DOZENS OF EXTENSIONS AVAILABLE FOR SAFARI. HERE'S OUR SELECTION OF NINE WE LIKE TO USE ON A REGULAR BASIS

By Cliff Joseph

YouTube Lyrics

If you're like me and you spend a lot of time listening to music videos on YouTube, then you'll really like the YouTube Lyrics extension from Rob Wu. Whenever you play a song on YouTube, this extension displays a little button just below the video window. Click on the button and the extension will locate the song lyrics on the internet and display them in a window at the side of the screen. It can search a number of different sites for the lyrics and, despite the name, the extension works on other websites too, such as Spotify and Grooveshark.



PanicButton

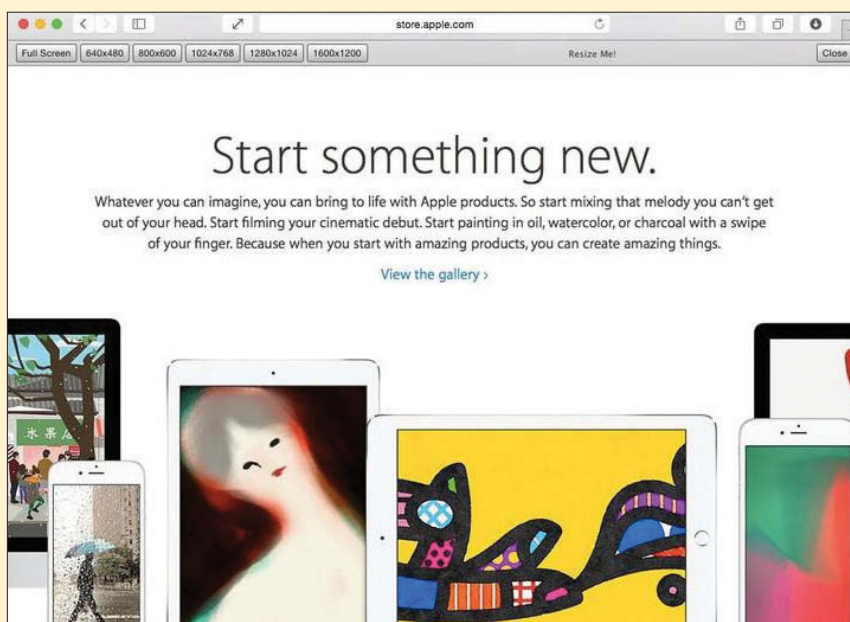
PanicButton is a handy extension for those NSFW moments. If you don't want anyone to see what you're looking at on the web, you can hit the PanicButton icon in Safari's address bar and all your current tabs will be hidden and replaced by a 'safe' web page of your choosing. You can also set up a keyboard shortcut

to activate PanicButton immediately, and for extra security, you can even add a password that prevents anyone from navigating back to see what you were looking at. Unfortunately, it's not 100 percent safe, as it only works with tabs in the front-most window, rather than in every window you may have open.



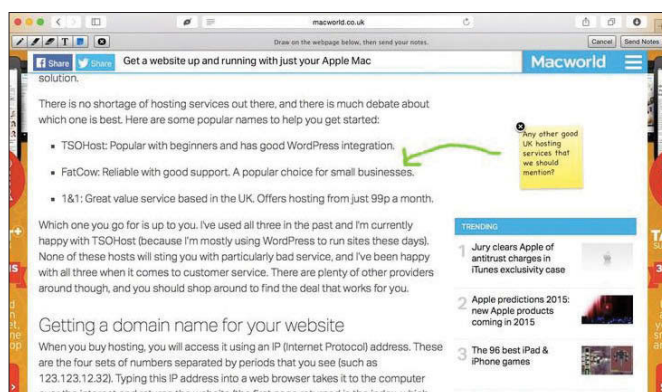
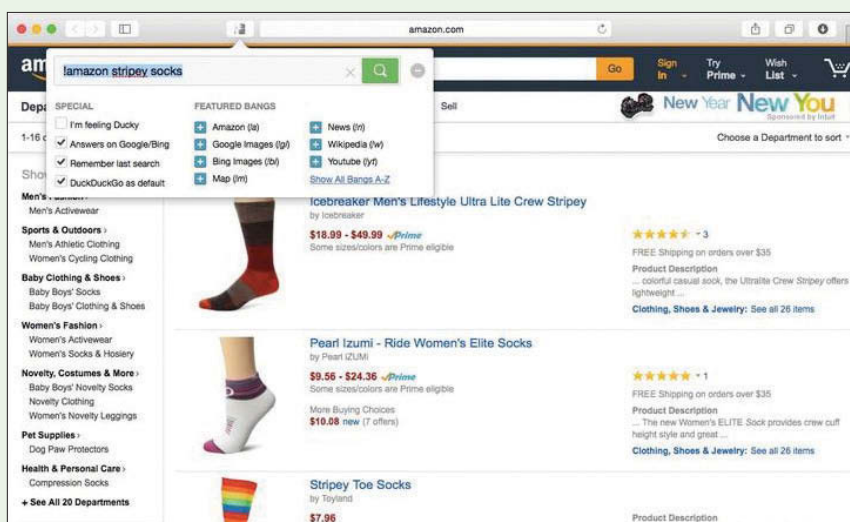
Resize Me

When I'm browsing the web I often end up with multiple windows scattered around the screen, and find that I spend a lot of time resizing windows to try and keep everything organised. There are a few extensions that allow you to quickly resize your browser windows, but Resize Me is the one I like best. It displays an extra toolbar with buttons that specify a number of different window sizes, and you can instantly resize the current window simply by clicking on the relevant button. You can also hide the toolbar when required, and specify a custom size for Safari windows that suits your display or the way you prefer to work.



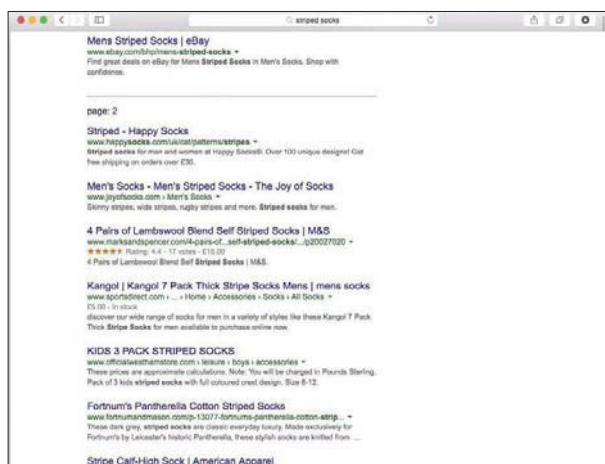
DuckDuckGo

Google is king of the search engines, but its poor record on privacy means many are using rivals. DuckDuckGo doesn't track you or keep any record of the searches you make. You can already set it as your default search engine using the Preferences panel in Safari, but this official extension adds a number of other features as well, including special 'bang' commands that allow you to perform a search on just one specific website. So, typing 'amazon stripy socks' would take you straight to Amazon and show search results only for stripy socks.



Coda Notes

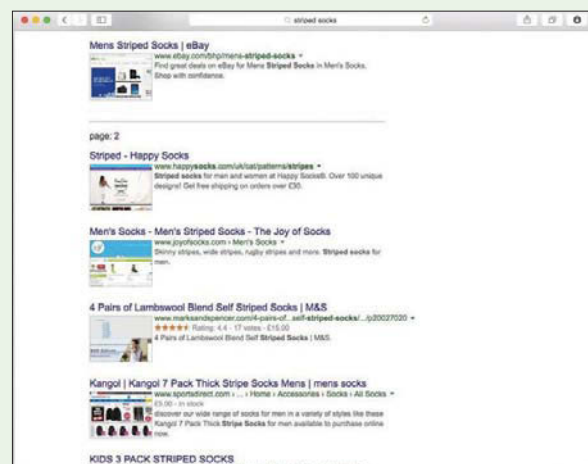
The latest version of Mail for Yosemite includes a Markup option that lets you add notes and annotations to images that you include in your emails. Coda Notes provides similar features for Safari, with a little toolbar that allows you to add notes or use a pen to highlight parts of a web page. You can then hit the 'Send' button to email a screenshot of the annotated web page to friends or colleagues. Coda Notes is designed for Safari 7, and is still waiting for a Yosemite update, but it's handy for Mavericks users who haven't updated to Yosemite and can't use Markup in Mail yet.



Autopagerize

When you're doing a search on Google, or shopping on eBay or Amazon, you generally get your search results served up one page at a time, and you have to keep clicking the 'Next' button to see each successive page of results. Autopagerize can speed this up for you. As you scroll down through your search results this extension automatically loads the next page of results and presents the information as one long, continuous list.

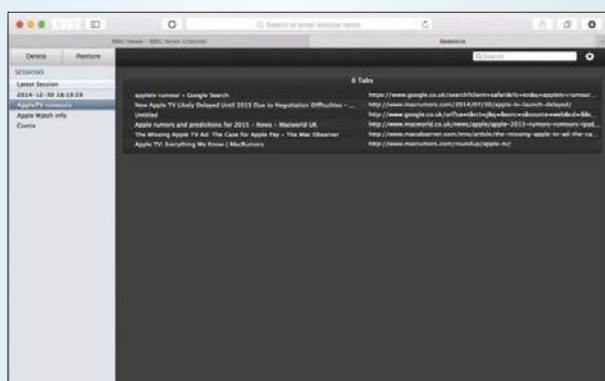
That may not suit everyone, but I find it handy when I'm looking for obscure bits of information on the web, or shopping for even more stripey socks.



SearchPreview

When you run a search on Google or one of its rival search engines, you'll generally see a few images at the top of the results list, followed by simple text descriptions for the rest of your results.

SearchPreview gives you a thumbnail preview of each web page along with the text description, which can help to speed up browsing if you're shopping for clothes or looking for other types of websites that carry visual information. The extension works with Google, Bing, Yahoo and DuckDuckGo, so all the main search engines are covered.



Sessions

When I'm working on a project I often have several web pages open all at once, and which I may want to return to at a later date. Safari does already have an option that lets you 'open all windows from last session', but this handy extension goes further than that by allowing you to save multiple browsing sessions that go back to different dates and times. So if I'm writing a couple of articles about the Apple Watch or the Apple TV, I can save two completely different sets of browser windows and tabs and then use Sessions to recall them whenever I need to.



Derpyme

Copying long web addresses can be a bit of a nuisance, especially if you want to share them with friends on sites such as Twitter. This has given rise to a number of URL 'shortening' services – websites that let you type in a long address and then give you an abbreviated alternative that is much easier to copy. There are also extensions that can shorten URLs for you, but derpyme is one of the easiest to use. Just go to the web page that you want and click the Derpyme button to generate the shortened web address, then use \mathbb{C} to copy it.



THE COMPLETE GUIDE TO USING PREFERENCES IN MAC OS X YOSEMITE

IN PART TWO OF OUR GUIDE TO SYSTEM PREFERENCES IN YOSEMITE, WE LOOK AT DISPLAY, KEYBOARD, MOUSE, PRINTER AND SOUND OPTIONS

By Craig Grannell

In the second part of our complete guide to System Preferences article, we look at how to change the display and keyboard settings, along with OS X Yosemite's energy-saving options, and much more.

Display settings in Yosemite

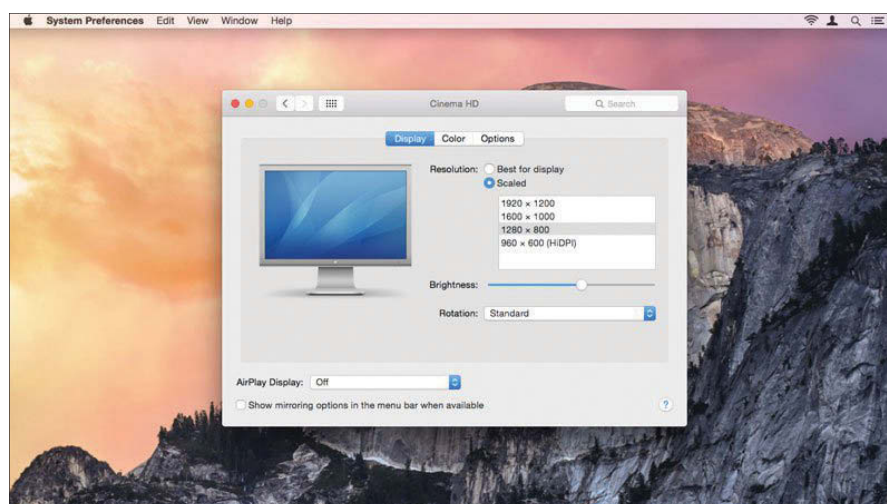
The options you'll see within the Displays pane are in part reliant on your Mac hardware. At a minimum, you'll see Display and Colour tabs for, respectively, setting resolutions and colour profiles. If you've multiple displays, that will add an Arrangement tab; some displays will also provide an Options tab.

Within the Display tab, you'll see an image representing your display (or the closest Apple equivalent), Resolution options, a Brightness slider, and some other settings that are determined by your hardware setup. Under Resolution, 'Best for display' sets your display to the

most optimal choice. Click Scaled to instead select from other supported resolutions. Hold Alt when clicking Scaled and you'll get a larger list of resolutions. Some of these may not be supported well by your display, so use caution. Holding Alt and clicking Scaled a second time

reverts the list to recommended resolutions for your machine.

On non-Retina Macs, specific resolutions will be listed (such as 1920x1200); on Retina Macs, you instead get pictorial representations of what your selection will achieve, labelled with the



likes of 'Larger Text' and 'More Space'. Clicking an option will immediately change your display's resolution.

The Brightness slider adjusts the display's brightness setting more rapidly than using your keyboard's media keys (F1 and F2), and on notebooks you'll have an optional checkbox for automatically adjusting brightness; this is worth keeping on at all times unless you find it doesn't work well for you.

Other options you may see include:

Rotation: Adjusts the rotation of the screen to 90-, 180- or 270 degrees.

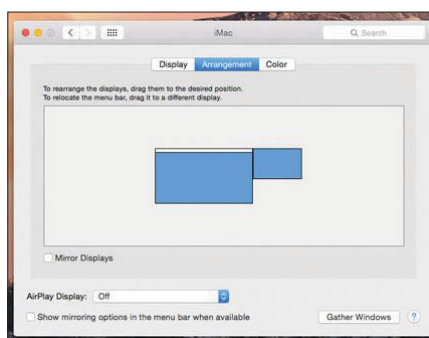
Refresh rate: Adjusts the refresh rate for the display.

Gather Windows: In multiple-display set-ups, you will get a separate Displays pane on each screen. Clicking this button gathers them all on to one screen.

Detect Displays: If you've multiple displays connected and the Arrangement tab does not appear, hold Alt and click Detect Displays to give the pane a nudge.

AirPlay Display: This mirrors the display to another compatible screen, such as your television via an Apple TV. This option can be more easily accessed by checking 'Show mirroring options in the menu bar when available'. This gives you a drop-down AirPlay menu alongside the likes of Spotlight and your menu bar clock.

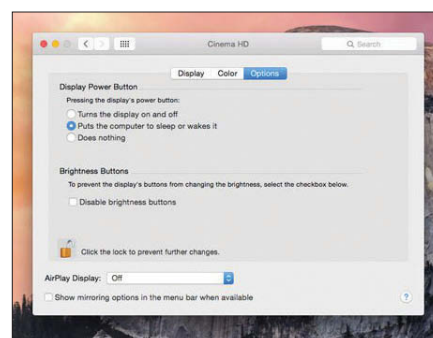
Note that should you own a Retina Mac and/or want a more traditional resolution switch in the menu bar, consider installing the free but



capable Display Menu or the extremely versatile SwitchResX.

The Colour tab is something typical users will never need to visit, but if you work with photography and design, you may need to calibrate your display. Unchecking 'Show profiles for this display only' will list some popular profiles you can choose from. 'Open Profile' loads the current profile into the ColorSync Utility app, so you can delve into its details in the ICC file format. Delete Profile deletes any selected custom profile but will not remove those that are preloaded on to your machine. The Calibrate option loads the Display Calibrator Assistant, a wizard for calibrating your display and creating a new bespoke profile for your particular set-up. The initial screen includes an 'Expert Mode' checkbox for users who require additional options beyond the defaults.

The aforementioned Arrangement tab appears when multiple displays are connected. If two displays are mirrored



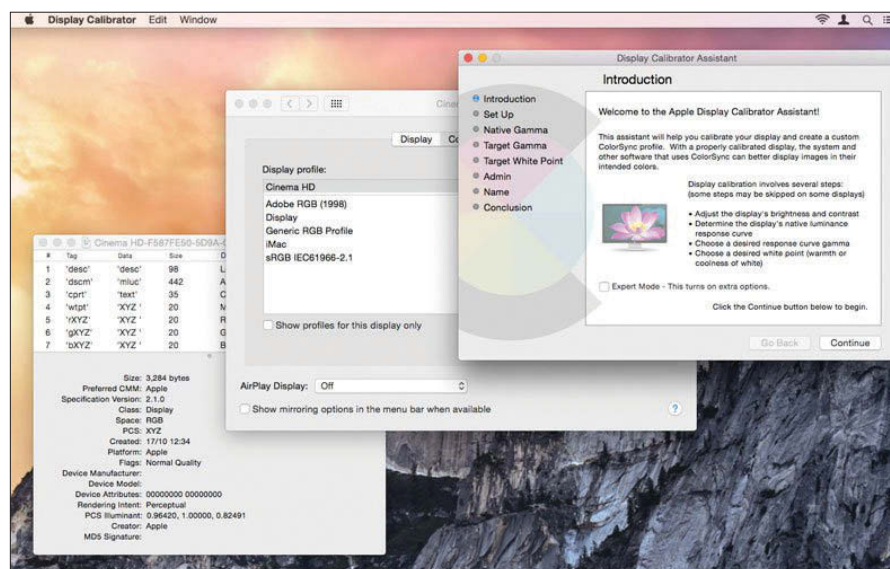
(denoted by the 'Mirror Displays' checkbox), basic representations of them will be overlaid. When this option is not selected, you can drag the displays around to change their positions. Typically, it's common to place one next to the other, providing a logical pathway for your mouse cursor to use, but you can place one on top of the other, if you wish. One of the displays shown in this tab will have a menu bar on, and that can be dragged to another to make it the primary display; however, as of Mavericks, every display has its own menu bar anyway.

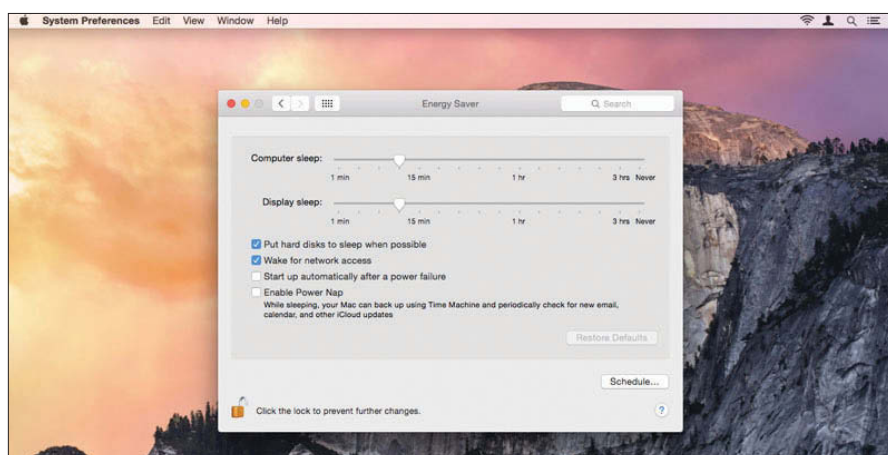
Finally, the Options tab provides settings specific to that display, such as using the display power button/power wake the Mac or power down/power up the display, or disabling its own brightness controls. You'll need to click the lock and authenticate with your username to make changes.

Energy Saver options

The Energy Saver pane is designed to adjust power settings based on user-defined criteria, which can be especially useful when eking out extra minutes from a notebook. You may need to click the lock and login to make changes.

Again, there are variations on this pane, depending on the hardware you own. Desktop machines get a single pane with separate sliders for defining how long the Mac should wait before sleeping the computer and display. Further options enable you to sleep disks when possible, wake the Mac for network access, and to start-up your Mac automatically after a power failure. 'Enable Power Nap' is also available for Macs with newer processors; when selected, this option enables your Mac to perform basic tasks, while

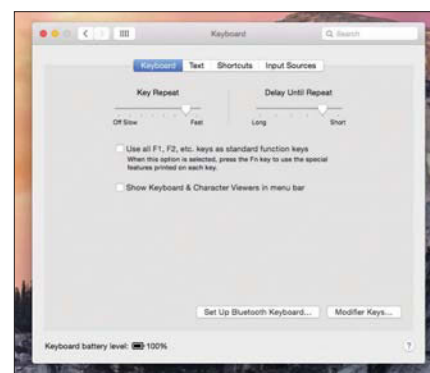




relevant disc. Alternatively, you can define a specific application or script to run, or tell your Mac to do nothing by selecting 'Ignore'.

Keyboard settings in OS X

The Keyboard pane provides a great deal of control over keyboard input.



The Keyboard tab has controls that change how your hardware works. The Key Repeat and Delay Until Repeat sliders, respectively, determine how rapidly a character repeats when its key is held down, and the delay that occurs before the repeating starts. Not all keys repeat. Although you can create a row of hyphens by holding '-', holding a letter will instead bring up a pop-up with related alternate characters, such as à or ä when holding 'a'; typing the adjacent number to any of these makes a selection without using the mouse.

Using Terminal, you can revert to older OS X behaviour (repeat for all keys) by entering the following command and restarting your Mac:

```
defaults write -g ApplePressAndHoldEnabled -bool false
```

Switching 'false' for 'true' reverts.

The awkwardly named first checkbox in the Keyboard pane, 'Use all F1, F2, and so on. keys as standard function keys', determines whether the top row of keys on your keyboard performs actions such as adjusting brightness and switching tracks in iTunes, or literally sends function-key-presses. The latter is often helpful in design software. Tick the checkbox and

sleeping, such as backing up to Time Machine and making iCloud updates.

The Schedule button provides further control, enabling you to define a start-up/wake time and a sleep time. These can each be set to run daily, only on weekdays, only on weekends, or only on a specific day of the week.

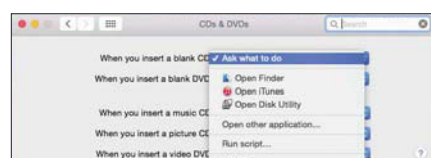
The Energy Saver pane on notebooks make some changes to these options, providing the means to define different settings for battery power and when you're using a power adaptor. The Battery tab logically removes automatic restart after a power failure and waking for network access. You can also show your current battery status in the OS X menu bar by clicking 'Show battery status in menu bar'.

The MacBook Pro with Retina display makes further adjustments, removing the 'Computer sleep' option and adding the means to prevent the Mac from sleeping automatically when the display is off.

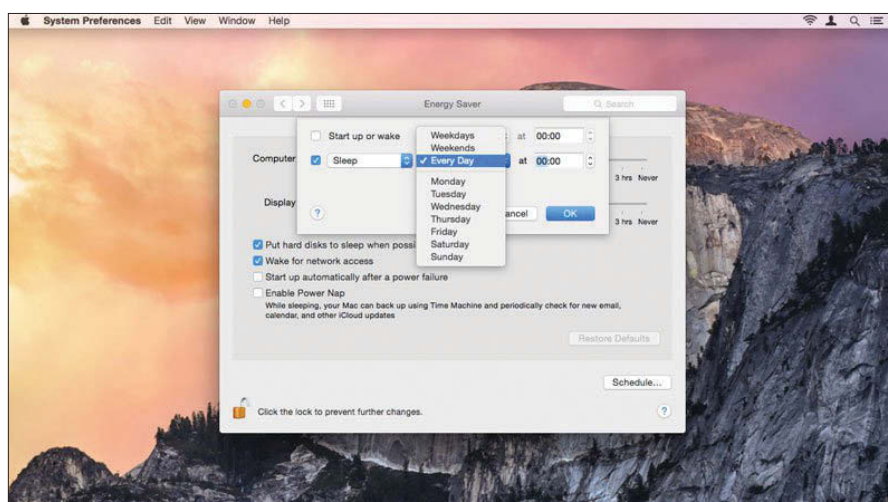
In all cases, Restore Defaults will revert your Mac's settings to factory defaults.

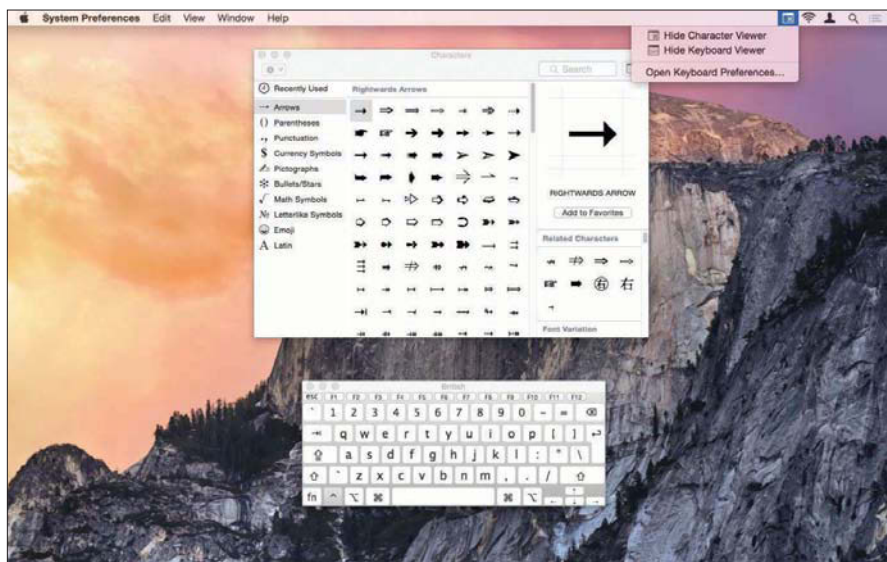
CD & DVD settings

The CDs & DVDs pane only appears if you have an optical drive for your Mac. This doesn't need to be a built-in drive — just one that's attached to and recognised by your system. (Remote Disc does not count.)



The five menus are all broadly similar, enabling you to set a default action when certain types of optical media are discovered by your Mac, namely the insertion of: a blank CD; a blank DVD; a music CD; a picture CD, and; a video DVD. If the option is set to 'Ask what to do', you'll get a dialog box on inserting a





special features will require you to also hold the 'fn' key to activate them.

If you're using an older keyboard with a newer Mac, certain functions may not be available via special keys, but FunctionFlip enables you to remap keys to the likes of opening Launchpad (F4 on newer keyboards). However, you'll need to [approve its use in Security & Privacy.

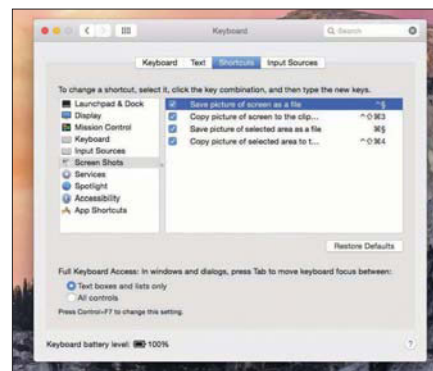
The second option enables you to display the Keyboard Viewer and Character Viewers in the menu bar, which appear as a menu extra. If you also have multiple input sources (see later), this menu extra will likely display as a flag. If not, the icon resembles a small keyboard with a Command icon.

At the foot of the window are two buttons: one to set up a Bluetooth keyboard, which brings up the standard OS X discovery window, and one to change how Modifier Keys work. Using the menus in the drop-down sheet, you can turn off modifiers (Caps Lock, Control, Alt, Command), or swap them round.

Unless doing so for accessibility reasons, they're best left alone. 'Restore Defaults' in this window restores factory settings.

The Text tab enables you to turn on auto-correct and smart quotes/dashes, and also to set the formatting of smart quotes. Software will sometimes override any defined system default, and require you to specifically turn on such changes in *Edit → Spelling and Grammar/Edit → Substitutions*, or equivalent settings. The Replace/With table is for adding specific corrections, which is useful for regular typos you make that OS X does not correct or spellings it erroneously updates. It can also be used as a basic text expansion tool, for example expanding 'omw' to 'On my way!'. It's also possible to add multi-line entries in the With column by holding Alt when hitting Return for a new line.

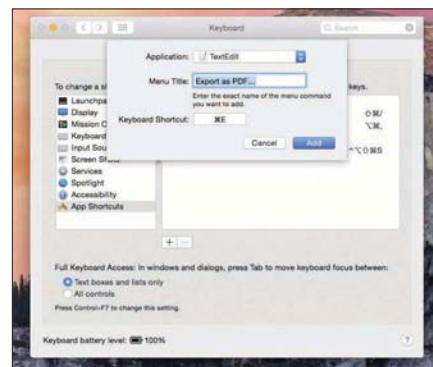
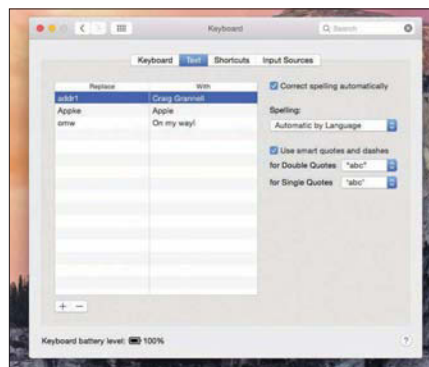
The Shortcuts tab houses system-wide and custom app-specific shortcuts, which are user-definable. These are categorised in sections, selected from the pane on the



left; click one and you'll see all associated shortcuts on the right. Below the right-hand pane is a Restore Defaults button that reverts any changes for the current category alone.

Shortcuts are edited by double-clicking the zone to the right of a shortcut's name and then holding your preferred key combination. For example, select Screen Shots in the left pane, then double-click to the right of 'Save picture of screen as a file' and hold Ctrl and S. This will update the shortcut for taking a screenshot from the standard Shift+⌘+3. Should you create a custom shortcut that clashes with another, you'll be informed (a warning triangle will be displayed, and also highlight the relevant category where the clash has occurred) and should then change one of them.

In App Shortcuts, you can create your own shortcuts for menu commands that don't have them, or ones you want to change. Click +, choose an application (or 'All Applications' if you want your shortcut to apply across all apps with the same command), type the *exact* menu title, and then add your shortcut. Click Add to continue. For example, if you'd like a quick shortcut for exporting PDFs from TextEdit, you'd choose TextEdit in





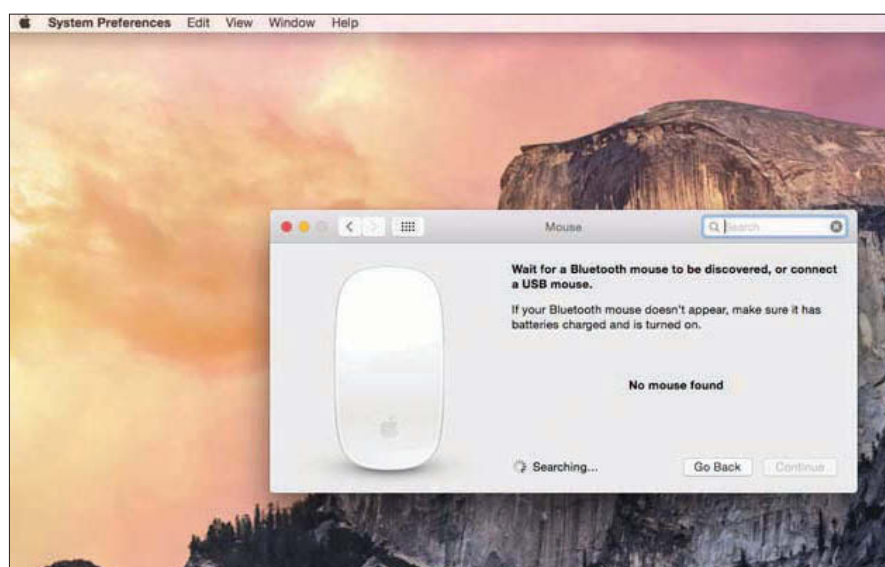
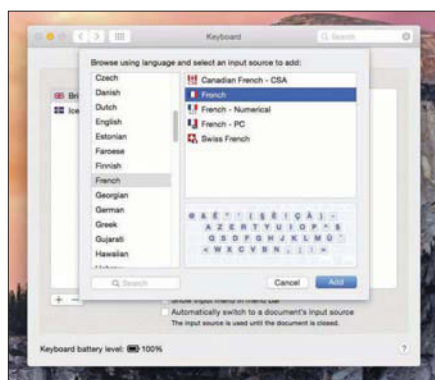
Application, type 'Export as PDF...' in Menu Title, and then click inside Keyboard Shortcut and add your shortcut (such as ⌘+E). Note that the ellipses is required in Menu Title; that can be typed using Alt+.

Be careful to not override existing shortcuts within applications when adding custom ones, and note that you cannot revert this entire section to factory defaults; instead, you can select individual shortcuts and use the '-' button to delete them.

At the foot of the window, you can adjust how the Tab key works. By default, it will switch the cursor focus between text boxes and lists. So in Safari, for example, pressing Tab switches you between input boxes on a web page, but if 'All controls' is active, Safari tabs and web-page buttons are added to the cycle. In Mail, instead of only tabbing between panes and search, 'All controls' adds buttons and the 'Sort by' menu to the cycle. Generally, the defaults are fine and faster, but 'All controls' is a useful accessibility aid; you can also use Ctrl+F7 to toggle this command in an ad-hoc manner rather than triggering it in System Preferences.

The final tab, Input Sources, enables you to add different keyboard layouts that you can switch between, such as ones that aid input in alternate languages, or the Dvorak 'simplified keyboard', which rearranges the keys in an attempt to increase typing rates and decrease errors. On selecting a keyboard, a preview of the layout is shown.

Optionally, you can choose to show the input menu as a menu extra, whereupon you'll see a flag or icon (as appropriate) in the menu bar to



denote your current keyboard. Click it and choose a source to switch to it. You can also from this menu select the Character Viewer and Keyboard Viewer.

Shortcuts → Input Sources enables you to define a shortcut to switch to the next/previous source (⌘+Space by default, which clashes with Spotlight, so it's best to change that to something else). The final checkbox enables you to automatically switch input source when you've chosen an input source for a document. The setting remains active only until the document is closed. For example, if you were working in two documents, one in English and another in Icelandic, you would choose Icelandic as the input source for the latter. Then as you switched between documents, OS X would toggle your input source between English and Icelandic keyboards without you having to do so manually.

Mouse options

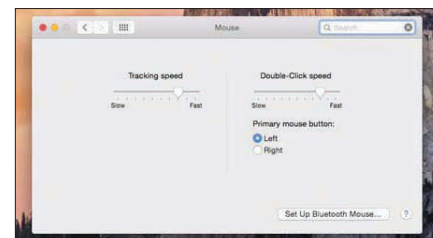
The Mouse pane is where you define settings for a mouse connected to your Mac. The pane's appearance can vary greatly, and is fully contextual, the options presented depending on your hardware.

On opening the pane without a mouse connected, it will show an image of Apple's Magic Mouse, and state your Mac's searching for a mouse. The pane will update when a Bluetooth mouse is found and you can then (if relevant) start the setup process; alternatively, you can

just plug in a USB mouse. Regardless of the hardware you add, Set Up Bluetooth Mouse remains a button option at the bottom-right of the pane; adjacent, if relevant, will be your Bluetooth mouse's battery level. Apple provides a support document on pairing Bluetooth accessories with a Mac.

Plug in the most basic possible mouse and you'll see 'Tracking speed' and 'Double-Click speed' sliders, which, respectively, enable you to adjust how far the cursor moves across the screen when you move your mouse, and how quickly you need to double-click the mouse button for that action to be registered by OS X. Only set either value towards Slow if you're a relative newcomer or require slower responses for accessibility reasons; otherwise, tend towards Fast, especially with tracking. Doing so means you can cover more screen space with smaller mouse movements.

With more powerful/capable mouse hardware, you're likely to see more options. Plug in a two-button mouse and you can define the left or right button as the 'primary' one for click events (the other being reserved for the contextual





menu); mice with scroll wheels will add a 'Scrolling speed' slider. Multi-button mice, such as Apple's old Mighty Mouse, may provide the means to assign actions to specific buttons, for example triggering OS X's application switcher.

With Apple's current Magic Mouse, you get a significantly different Mouse pane, split into two tabs: Point & Click and More Gestures. Each of these houses a small number of options, and also videos of each option in use; these automatically play back when you hover the mouse cursor over the relevant item – you don't need to click.

Point & Click includes a Tracking slider, and also checkboxes for 'Scroll direction: natural', 'Secondary click' and 'Smart zoom'. 'Secondary click' when active enables you to use the right-hand side of the mouse as a virtual right-click button; the option can be switched to the left of the mouse by using the pop-up menu under the item's label.

The other two options when active echo iOS devices. 'Smart zoom' enables

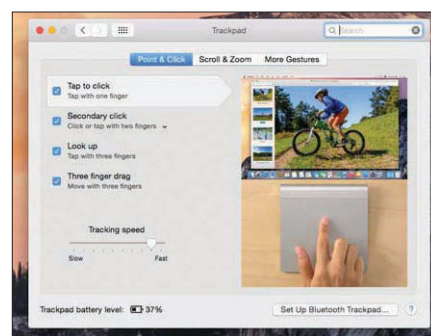
you to double-tap in Safari to zoom the content the mouse cursor is over; a second double-tap reverts. When active, 'Scroll direction: natural' scrolls content in the direction you move your finger, like you're pushing or pulling it. Turn off this setting and OS X will behave as it used to, with your drags essentially controlling scrollbars rather than directly manipulating content. (So dragging downwards would scroll content upwards.)

In More Gestures, you can activate commands for swiping between pages with one or two fingers, swiping between full-screen apps with two fingers (assuming the previous option is not set to use two fingers), and accessing Mission Control with a two-finger double-tap.

Trackpad options

The Trackpad pane enables you to define functionality for your notebook's built-in trackpad, or for a Magic Trackpad connected to a desktop machine via Bluetooth. Like the Mouse pane, if no trackpad is found, you'll see an image of Apple's Magic Trackpad and the pane searching for one; again, there's a setup button and you can refer to Apple's support document for pairing advice.

The Trackpad pane provides three tabs: Point & Click; Scroll & Zoom; More Gestures. Many of the options can bring OS X inputs closer to what you experience on iOS. Hovering the

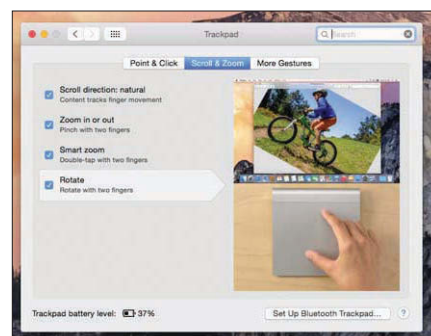
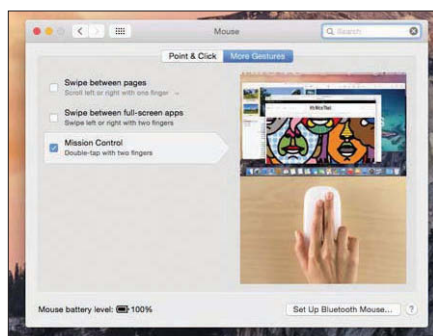


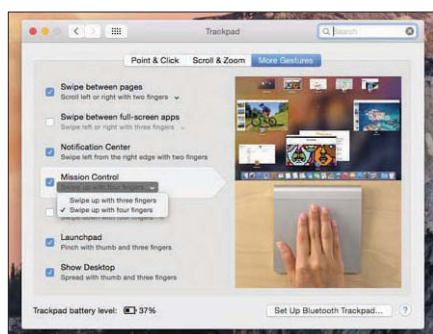
cursor over any of the options provides a video that's representative of the hardware you're using.

Point & Click's options are all about moving the cursor and manipulating onscreen content. With 'Tap to click' active, you only need to tap your trackpad for a click event, rather than pressing down until the hardware physically clicks; we recommend this setting unless you accidentally trigger clicks all the time. 'Secondary click' enables you to bring up context menus with a two-finger tap, or alternatively (via the menu options) by clicking in the bottom-right or bottom-left corner.

If 'Look Up' is active, you can three-finger tap on a word and a pop-up will provide its dictionary definition. 'Three-finger drag' enables you to move a window by three-finger dragging its toolbar rather than click-holding your trackpad and then sliding your finger, which is rather more awkward.

In Scroll & Zoom, there are four optional settings: Scroll direction: natural; Zoom in or out; Smart zoom; Rotate. 'Zoom in or out' and Rotate are two-finger gestures (respectively, pinch and rotate) that ape iOS equivalents, zooming or rotating documents in compatible apps. 'Scroll direction: natural', as per the Mouse pane's setting,





'pulls' scrolling content in the direction your finger moves, like it does on a touchscreen; and 'Smart zoom' intelligently zooms and unzooms a section of a web page in Safari.

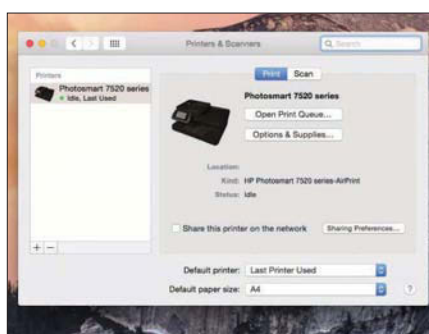
The final tab, 'More Gestures', provides a raft of options: Swipe between pages; Swipe between full-screen apps; Notification Center; Mission Control; App Exposé; Launchpad; Show Desktop. In each case, activating the option will enable you to trigger the labelled action by performing the associated gesture, for example accessing Launchpad by pinching with a thumb and three fingers. In the case of the swipe settings, Mission Control and App Exposé, there are alternate gestures available, although if you select a setting that clashes with an existing one, the new choice will be activated and the other will be disabled.

Note that relatively modern Apple hardware is significantly more nuanced in terms of its capabilities than the settings you find within System Preferences. BetterTouchTool is worth checking out if you want to experiment with additional and more complex gestures for controlling your Mac via its trackpad.

Printers & Scanners options

The Printers & Scanners pane is used to set up printers and scanners, define default settings for use, and to access options for a selected device. The default options are defined using the two menus at the foot of the window, and enable you to choose a printer ('Last Printer Used' or a specific device) and paper size. The initial selection for the latter of these will differ by region (US Letter, A4, and so on).

Otherwise, this pane will begin life empty. Clicking the '+' button enables you to start adding a printer or scanner.

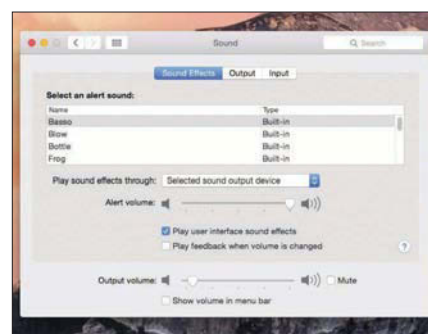
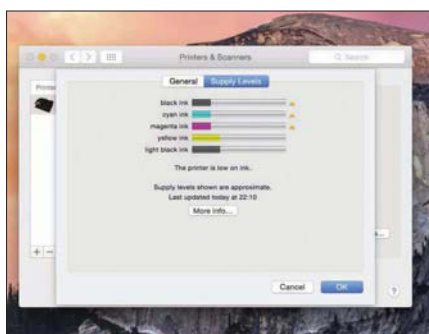


The process of installation may vary by model and type of connection.

For reasonably modern hardware, you may find OS X is capable of very quickly installing a wireless printer that you've already connected to your network. In such cases, the printer can be added by selecting it from the list (although networked printers will sometimes take a few seconds to appear after the window is first opened) and clicking Add. If necessary, OS X may ask permission to download software for your printer; click Install if such a dialog appears.

When working in an office set-up, you may need to use the IP or Windows tabs instead. The former gives you fields for entering the IP number of a printer and the protocol to use, along with the name and location of the printer. The Windows tab is for accessing printers installed in a Windows workgroup environment. Note that if you have virtualisation software installed, you may find instances of your existing printer within this tab. There is obviously no need to install it a second time.

Once a printer is installed, select it from the list and you'll see its information (name, kind and status). The 'Open Print Queue' button opens the printer's jobs window; 'Options & Supplies' will give you details about the printer, enabling



you to change its name under the General tab, and access ink levels under Supply Levels. Some printers may offer further buttons, including website links, Driver (for details about the printer driver that's in use) and Utility, which opens a separate printer app.

Towards the foot of the window is a checkbox for sharing the printer on the network. Select it to do so.

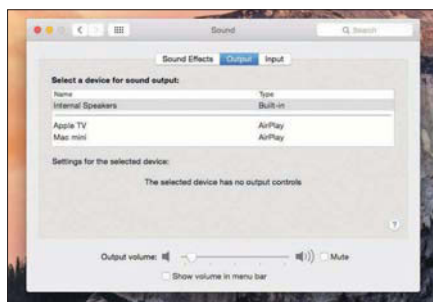
If your device also happens to be a scanner, you will see separate Print and Scan tabs. The latter provides an Open Scanner button that launches the standard OS X scanning interface.

Sound options

The Sound pane is where you define system alert sounds, and settings for audio inputs and outputs. Accordingly, it has three tabs: Sound Effects, Output and Input. The largest section of the Sound Effects tab enables you to select an alert sound. Funk is the default; Sosumi will likely be a fun alternative for Mac veterans, given its Mac OS roots. You can add your own alerts by placing custom AIFs into ~/Library/Sounds (for just your own account) or /System/Library/Sounds (for all accounts). You'll need to restart System Preferences to access custom sounds from the menu.

Below this pane are settings that affect the alert sound. 'Play sound effects through' enables you to define through which output you'd like alerts played. This defaults to your choice of sound output device, but can be overridden by selecting an alternate option (for example if you want alerts to play through your Mac's speaker and not a headset you're using for gaming).

The alert volume level can be adjusted to suit, using the slider; and with the

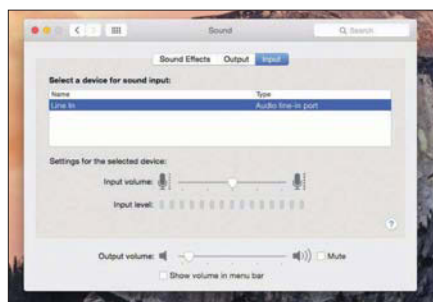


checkboxes, you can define whether user interface sound effects are played (such as dragging something to the Trash) and whether you get audio feedback when changing volume using the keyboard's media keys (F11 and F12)

At the foot of the window is a volume slider and mute checkbox (F10 is the keyboard alternative), along with a button for displaying the Volume menu-bar extra, which lets you change the volume by clicking it and dragging the slider.

The Output and Input tabs enable you to select a device, respectively, for audio output (such as headphones, USB headsets and devices, and Apple TVs over AirPlay) and input (line-in, microphones, and so on). On selecting an output device, those that support it will provide a Balance slider to adjust where the centre of the stereo image is positioned; for a selected input device, you can adjust the input volume while simultaneously seeing the input level. Depending on your recording software, this pane is worth being mindful of if you find recordings too quiet (input level too low) or distorted (too high). When using the internal microphone, you'll also get an option to use ambient noise reduction, which attempts to reduce background noise. Leave this on, unless you've a good reason to disable the option.

It's also worth realising that OS X isn't always especially intelligent regarding



whatever you've plugged into your Mac. With USB audio devices, it will attempt to correctly identify them and display their names within System Preferences. However, if you use a standard stereo minijack lead to connect external speakers or output your Mac's audio to an amp via the Mac's headphone socket, OS X has no way of knowing this, and so that output will simply be called 'headphones'.

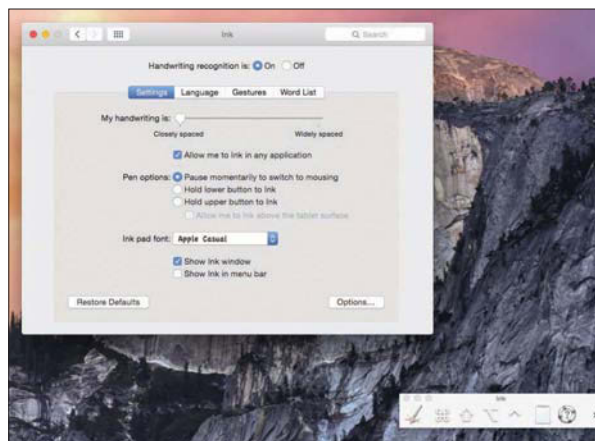
Note that you needn't access System Preferences just to perform quick switches of output and input audio sources. With the aforementioned menu bar extra activated, Alt-click it and instead of the volume slider, you'll see a list of available output and input devices; to switch to one, just select it in the menu. AirPlay devices will be badged with the familiar icon, differentiating them from other sources.

Ink options

Relatively few Mac users will ever see the Ink System Preferences pane, because it requires a graphics tablet that uses a pen-like stylus. Once such a peripheral is attached to the Mac, the pane appears next to Sound. When opened, you can turn on handwriting recognition, or use four tabs (Settings, Language, Gestures, Word List) to define options.

When handwriting recognition is on, the Ink window appears, with buttons for toggling 'write anywhere' and your Mac's cursor, selecting function keys, opening and closing Ink's pad (which itself has writing and drawing buttons at the bottom left), activating Help, and returning to the Ink pane in System Preferences.

In Settings, you specify your handwriting spacing and whether you want Ink to work in any application (rather than just Ink's pad). Pen options enable you to pause to switch back to mousing mode, or to only Ink when a specific button is held. (This may

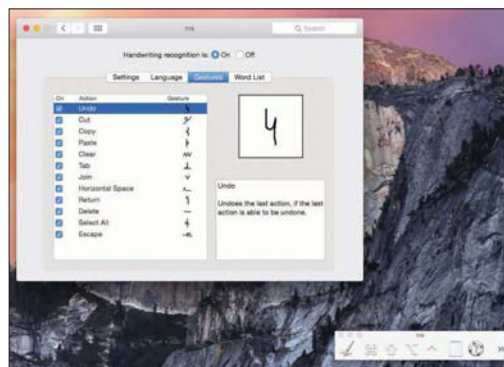


clash with your tablet's settings, at which point you'll be prompted to make relevant changes.) You can also set an alternate font for Ink's pad (choose from Apple Casual, American Typewriter Bold, Didot and Monaco), and define whether to display the Ink window and menu bar extra.

Click the Options button and you access further settings, to define how rapidly handwriting is recognised, the distance the pen moves before you begin inking, and how long the cursor must remain still before reverting to mouse mode.

The other three tabs have rather fewer settings. Language defines the language Ink is set to recognise; Gestures outlines gestures you can use to perform system actions or insert characters, which can be disabled or activated by clicking the checkboxes; and Word List enables you to add uncommon words that Ink is then supposed to recognise (but, during testing rarely managed).

Next issue we'll continue our guide to System Preferences by looking at iCloud, internet accounts, extensions, Bluetooth, sharing and network settings.





10 steps to fix a broken internet connection

THE INTERNET HAS BECOME CRITICAL FOR BOTH WORK AND PLAY; SO WHEN IT GOES DOWN IT CAN CAUSE MAJOR ISSUES. THE SOLUTION IS OFTEN FAIRLY SIMPLE: HERE ARE SOME THINGS TO DO WHEN YOU CAN'T CONNECT **BY KENNY HEMPHILL**

The always-on internet connection has only been a feature of most of our lives for a decade or so, yet it's become so critical for both work and play that we feel lost when that connection breaks down. Thankfully, most of the time the problem causing the break down can be fixed without resorting to calling our broadband provider. Here are 10 things you should do when you can't connect to the internet.

1. Try another website or service

If you're using a web browser, try navigating to another site to make that sure the problem isn't specific to one website. If that doesn't help, try a different browser. If you're using a service such as Twitter or iTunes, go to a web browser and try and navigate to macworld.co.uk or google.co.uk.

2. Use Wi-Fi?

Check that you're on the right network. OS X and iOS are generally very good at connecting to the 'right' network, usually the one operated by the modem/router

connected to your ISP's broadband network. But they're not perfect. If, for example, you have a BT Home Hub, you might find it connects to the 'BT Wi-Fi' or 'BT Wi-Fi with FON' access points instead of your home Wi-Fi network. Click on the Wi-Fi menu in the Mac's menu bar and check which network has a tick next to it. If it's not the right one, select the correct network.

On an iPhone or iPad, go to Settings and Wi-Fi to check.

3. Is it the network or the device?

If you can't access the internet on your Mac, check whether another device, for example an iPad, can connect. If the second device can connect, the problem is with your Mac and not the router or broadband connection. If the problem is with an iPad, try connecting from your Mac.

4. Turn it off and then on again

It's clichéd advice, but it's a cliché for a reason: it works. If your Mac is displaying an exclamation mark over its Wi-Fi menu bar item, click the menu and select 'Turn

Wi-Fi off.' Wait a few seconds, then turn it on again. Sometimes this is all it takes to fix a Wi-Fi problem.

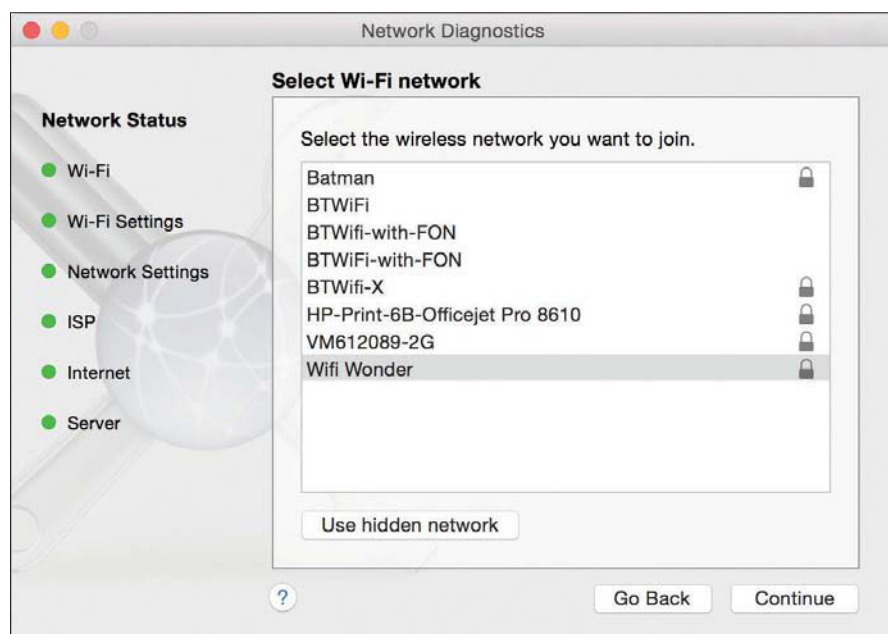
If the problem is with an iOS device, go to Settings, then Wi-Fi and move the slider to the off position. Wait a few seconds, switch it back on again, and then try connecting again.

5. Restart your router

If you've eliminated all of the above, the next step is to restart your router. It's remarkable how many problems can be fixed this way. Even if the status lights on the front of the router show that it's connected, it's worth restarting. You can do it either by pressing the power button, waiting 10 seconds, and then pressing it again, or by pulling the plug out, waiting, and then plugging it back in again. You'll have to wait for a minute or so until it resets itself and reconnects. Once it's done that, try and connect to the Internet again.

6. Network diagnostics

Your Mac has a built-in tool for diagnosing connection problems, but, like many of



OS X's useful tools, it's tucked away. To access it, click System Preferences in the Apple menu and click on the Network pane. At the bottom of the window, click Assist Me. On the next dialog box, click Diagnostics. You'll now be taken through a series of steps; the first will ask you to choose how you connect to the network.

If you choose Wi-Fi, you'll then be asked to choose which Wi-Fi network you want to connect to. The utility will then perform a series of tests to try and identify where the problem lies. Sometimes it will be able to fix it, on other occasions it will tell you where the problem is, but won't be able to resolve it.

7. DNS

If none of the above work, it's worth changing the Domain Name Server (DNS) settings. The DNS settings dictate where your Mac or iOS device goes to look up a URL and turn it into an IP address. If there's a problem with the DNS server, it won't be able to resolve URLs and so your Mac won't know where to go to find a website or online service. If you've never changed DNS settings, they'll be set at the default used by your ISP. And so if your ISP has DNS issues, you'll have connection problems.

To test whether you have a DNS problem, open a web browser and type `http://74.125.224.72/` into its address bar. That should take you to `google.com`. If it

does, and you can't access Google by typing 'google.com' into the address bar, it's a DNS problem.

To fix it on your Mac, go to the Network pane in System Preferences again. Click Advanced, then click the DNS tab. Click on each of the servers in the left hand window and click the '-' button at the bottom. Now replace them with either DNS servers run by Open DNS (208.67.222.220 and 208.67.222.222) or Google (8.8.8.8 and 8.8.4.4). Both are free to use and very robust.

You can do the same on an iOS device by going to Settings, then Wi-Fi and clicking on the 'i' next to your Wi-Fi network. Then type the new DNS server address.

8. If some sites work but others don't

Occasionally connection issues crop up with several websites, but not all. On these occasions, out of date cached files may be to blame. The solution is to flush the browser's cache. The method will depend on

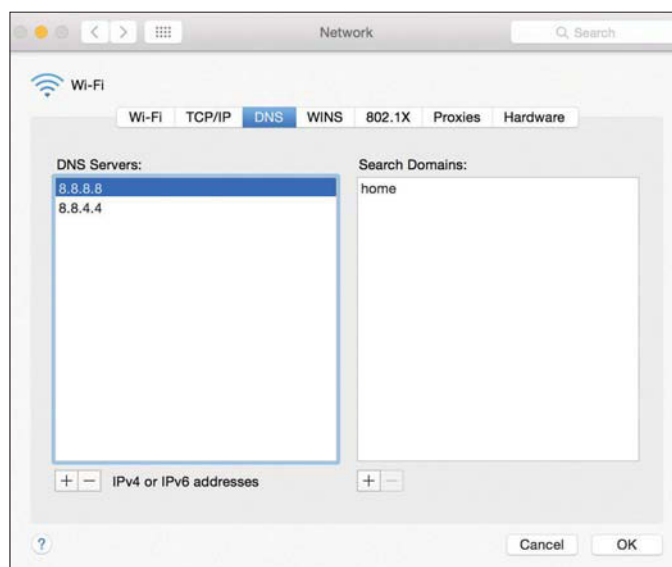
your browser. In Safari 8, go to the Safari menu and select Clear History and Website Data, then choose 'all history' from the menu. Note that this will delete your History on the Mac, and, if it's signed into your iCloud account, all other devices signed into that account.


9. Connect directly to your router

If you know the IP address for your router's admin page, type that into the address bar in a browser window. If you don't, it should be in the manual. Log in to the router with your username and password and look for the troubleshooting section. There should be guidance there, or a diagnostic process, which should help identify whether the problem is on your network or your ISP's.

10. Contact your broadband provider

If all else fails, it's probably because there's a fault in your broadband provider's network. They should have a status page on their website advising where there are problems. If you can, navigate to that from a phone with a mobile internet connection and check. Otherwise, call the helpline number and choose the option which takes you to the automated service which advises of local connection problems. If there's nothing reported, you can either wait and try again or steel yourself and join the queue to speak to someone and report the problem yourself. Good luck.





USB-C is our new connection overlord. Get used to it

IN WITH THE NEW, AND OUT WITH THE EVERYTHING ELSE
BY GLENN FLEISHMAN

When news of a new Mac notebook leaked in January, one of the aspects that seemed absurd was the omission of multiple ports. There would be just one hole and it would be USB-C, a format never before seen in a Mac and unfamiliar to most people, as it was first unveiled in September 2014.

It turns out that it wasn't absurd at all. With the new 12in MacBook, Apple has gone all in for all-in-one, using USB-C to provide power, display output, and USB connections. Thunderbolt is gone. The SD card slot is gone as well. And the MagSafe component of the power connection has disappeared into very thin Air – I mean, thin MacBook.

Apple says that USB-C adaptors can provide HDMI, DisplayPort, VGA,

ethernet, and USB 3.1 support, and can both power a computer and send power to attached peripherals. Notably, ethernet and DisplayPort options aren't included in the current USB-C accessories list at the Apple Store.

Thunderbolt is the really big loser in the new 12in MacBook: USB-C can't support current Thunderbolt devices. Although when Thunderbolt 3 launches, it will plug into a USB-C connector.

In the pursuit of slimness, sleekness, and simplicity – the same goal that brought us Lightning – Apple has done away with more than the Thunderbolt port. But is USB-C a worthwhile shift for users? Well, all interfaces are compromises in one way or another, and Apple believes USB-C meets more customers' needs, even as the new interface throws some people off a cliff.

The upside is compatibility, and thus lower costs and more options. USB-C is also a unifying and universal standard that doesn't involve a single company acting as a licensing gatekeeper, the way Apple protects Lightning cables and adaptors. USB-C would seem to have a

lot to offer, but first we have to get over the hump of newness.

FireWire in the hole

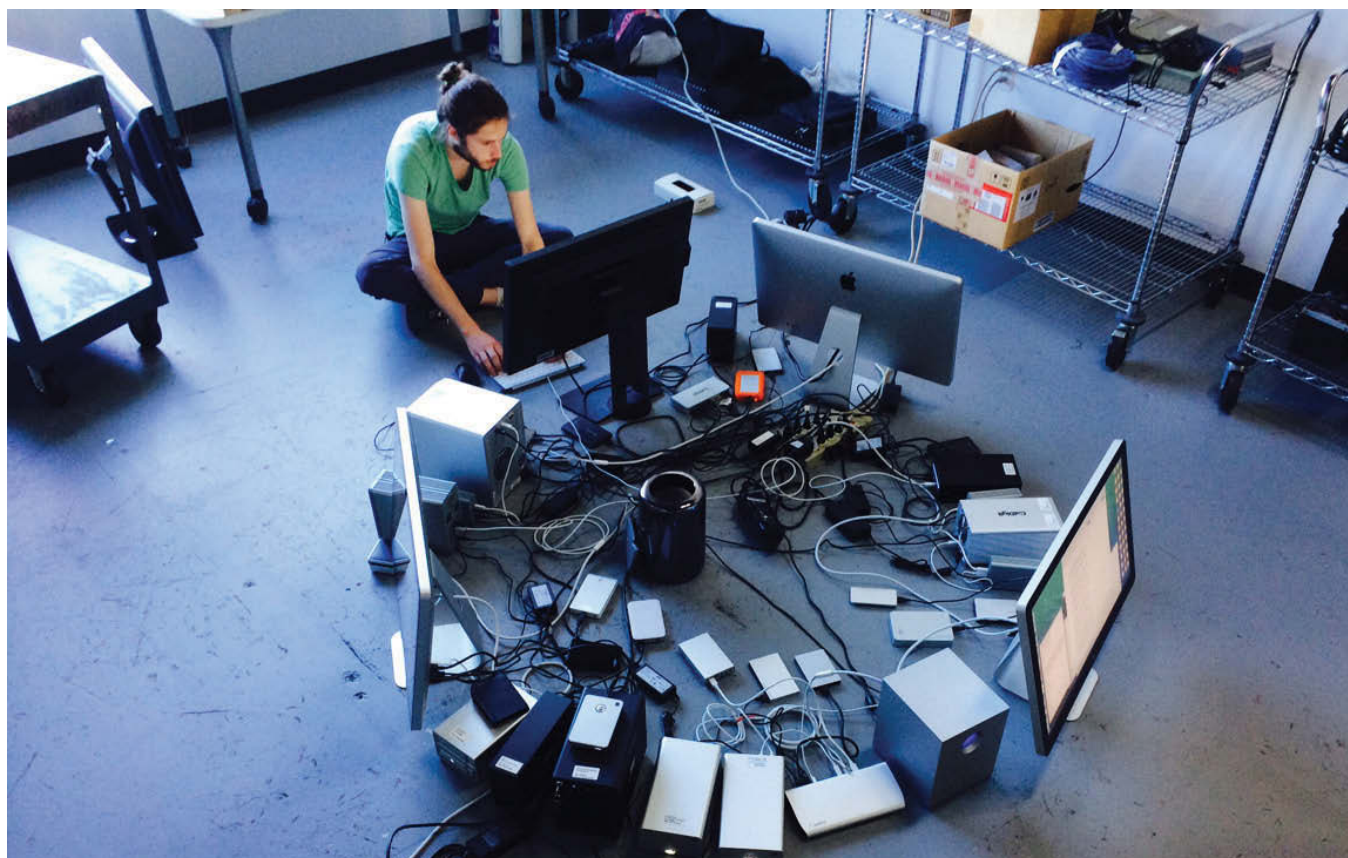
We've gone through this before, and every iteration brings pain and joy. The pain comes from having to purchase new adaptors and figure out the limitations of the new interface. The joy flows from improvements in performance and flexibility, and simplicity in making connections.

The bump from Apple Desktop Bus (ADB, Apple's original serial peripheral standard for keyboards) and SCSI (for hard drives and scanners, among other uses) to USB 1.1 was a big one in the first iMac circa 1998. ADB was slow, required daisy-chaining, and could be finicky. SCSI was fussy as all get out, despite its relatively high speed. (Remember terminators? Self-termination? Numbering devices? Running out of numbers?)

But USB let you plug and unplug, even while devices were in use. Sure, you could leave a hard drive in a weird state by unplugging before it was fully unmounted, but you at least wouldn't fry



FireWire had such promise. Apple even made a FireWire 800-to-Thunderbolt adaptor for the most recent Macs. It won't work on the new MacBook at all.



its circuits by accident. USB 1.1 was always an intermediate step. At 12Mb/s, it was far too slow and USB 2 wasn't ready when Apple was. FireWire 400's introduction just a year later offered a vast improvement in speed. FireWire 800 doubled that a couple of years after, but despite a path to 1600- and 3200Mb/s, the standard was mostly single purpose: a way to move data rapidly among storage.

Enter Thunderbolt, the unifier. Originally slated to work over resilient fiber optic cables, allowing low power requirements and long distances, the first release was a bit of a compromise. It used copper wire and could extend only three meters maximum, but could also deliver power, which wasn't part of the optical specification. The first version shipped on a Mac just four short years ago.

The video standard DisplayPort, which has many potential variations of throughput, each of which can support a maximum refresh rate and monitor resolution, was supported as something that flowed over Thunderbolt, allowing forward compatibility. A Thunderbolt connection could support a DisplayPort

equipped monitor. Thunderbolt's first iteration was 10Gb/s per channel, allowing an aggregate of 40Gb/s (20Gb/s in each direction). Thunderbolt 2 doubled that throughput.

But Thunderbolt stalled. While it's available in computers beyond Macs and in peripherals from many companies, it's never become pervasive. The rest of the industry has focused efforts on USB 3.0. Apple may eat a hunk of the profit in the PC market, but for unit volume among all connection types, USB is orders of magnitude higher.

Apple didn't disregard progress on USB, adding USB 3.0 ports in Mac models that started shipping in 2012. But you can only shrink a mini-DisplayPort connector used for Thunderbolt so far. It's got one correct orientation, and it can't easily be used to power other devices via a single port.

Thunderbolt was essentially too expensive to implement on inexpensive devices. It also has licensing rules that deterred some manufacturers. The USB-C adaptor format avoids just these kinds of roadblocks.

Not one of these Thunderbolt devices works with the new MacBook. They don't work with the iPad either.

The USB-C spec is under the control of the USB 3.0 Promoter Group. Apple wasn't among the key members that drafted version 3.1, but it had heavy engineering participation in developing USB-C. The group engages in no preferential or discriminatory treatment about who may license or use it. Lightning can't support the data rate needed for peripherals, nor the wattage required for a notebook. Nor can it achieve the industry adoption needed for an ecosystem.

Within that worldview, USB-C seems more inevitable than unexpected, and we'll ultimately get used to it. That appears to be Intel's expectation. It seems to have taken an "if you can't beat 'em, join 'em" stance in changing its Thunderbolt 3 connector to USB-C.

USB all that you can USB

While USB 3.0 is a few years old, USB-C only debuted last September, and was



The new MacBook USB-C charging cable is USB-C at both ends, and the charging brick has a USB-C port.



A USB adaptor will set you back £15.

clearly designed in part to replicate the advantages of Apple's Lightning connectors. It's slim and reversible. Apple's flavour has a raw data rate of 5Gb/s, and passes 29W of charge from the included power adaptor.

The Dock-to-Lightning transition was painful for iOS devices, because many of us had invested in an ecosystem that relied on the Dock connector. Most of us swapped our iOS device when we got a new iPhone, iPad or iPod touch, and in a home social grouping would pass down an old model. Lightning meant our stereos and cables and docks wouldn't serve old and new, yet the old devices still had plenty of life in them.

Worse, most people I know with an iPhone have two or more cables, sometimes permanently installed in different places, like a car, or stashed as an extra in a satchel or purse. The early Lightning adaptors were £25 for a little stub and £30 for a cable. You could wind up with incompatible audio and other gear, and £100 of cable costs. It annoyed people, and rightly so, because it felt like an upgrade penalty instead of benefit.

But the situation is different with the MacBook, as you won't lose a lot of sunk costs if you're shifting from one Mac laptop to the MacBook. The only interface types you lose are MagSafe and Thunderbolt (for now). (If you

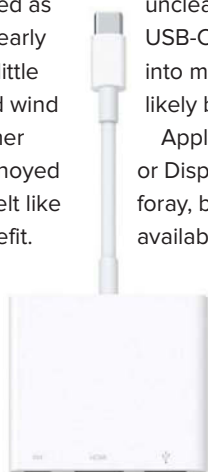
need Thunderbolt devices, the MacBook isn't the computer for you anyway.) Your MagSafe adaptors, meanwhile, can clearly continue to be used with your older computer, whether you keep using it or pass it on.

USB-C allows bidirectional charging, which changes the cable equation. The new computer ships with just a USB-C charging cable (two meters, £25 sold separately) and a 29W power adaptor with a USB-C jack (£39 separately). The charger can power an iPhone or iPad (with a Type A USB adaptor), and ostensibly the MacBook could be charged via any existing USB charger – although a 5- or 10W charger or a 10- or 12W car adaptor will cause it to use up its battery much more slowly or charge very slowly while sleeping. (I was unable to get confirmation on whether the MacBook could be charged by a non-USB-C adaptor, but the spec seems to call for it.)

With a USB-C adaptor that splits into multiple interface types, you can charge devices over its USB parts just as if they were part of the computer's hardware. Apple is offering three adaptors to start with: a £15 USB-C to USB 3.1 Type A port, into which a regular Type A connector can fit; and £65 A/V adaptors, one for VGA and one for HDMI, both of which also sport USB-C charging and USB Type A ports. (It's

unclear at the time of writing if that USB-C charging port can be chained into more adaptors, but it seems very likely based on the spec.)

Apple isn't offering gigabit ethernet or DisplayPort adaptors in its initial foray, but these adaptors should be available soon from third parties. In



Apple has announced two Multiport AV adaptors. One has HDMI and the other VGA, and they both also sport a USB-C port and a standard USB port.

2014, such adaptors were expected in early 2015, and this availability projection may be one reason Apple didn't ship the new MacBook until April. Its spec sheet says that the MacBook comes with "native DisplayPort 1.2 output," which will support 4K (3840x2160 pixels in dual monitor or mirroring modes), but there's technically no way today to access that stream of video data.

A spec was set last September to encapsulate DisplayPort inside a USB-C to USB-C cable, just like Thunderbolt encapsulated DisplayPort, so we'll likely see some of that in future monitors as well.

The power persists

Thunderbolt isn't dead and USB-C doesn't look like it's going to kill it off soon. Indeed, it may be the means by which Thunderbolt 3 gains popularity as people are able to take advantage of thunderbolt's higher performance with external drives and other peripherals.

If you're dead set on buying a USB-C machine, make sure you know what you're getting into – especially if you use your laptop as a fully appointed portable workstation like I do. Before ordering, you need to make sure the particular multi-prong adaptors you'll need are available, compatible, and affordable.

It could be that Apple is signalling the post-peripheral era, appealing to a new majority of users who really only need USB to charge their machines. The current MacBook's SD Card slot is of little use to an iPhone photographer, for instance.

And with more than nine hours of battery life, many mobile-first users can comfortably give up their single do-everything USB-C port when they need USB connectivity for, say, a thumb drive. Sure, that USB-C port is also your lifeline to charging power. But the definition of 'power' user could be about to change.

Tested: The first batch of USB-C adaptors and cables

AS NEW CABLES AND ADAPTORS TRICKLE OUT WITH USB TYPE C SUPPORT, THERE ARE STILL TANGLES TO RESOLVE **BY GLENN FLEISHMAN**



When Apple announced the MacBook in March, the new USB Type C port caused head shaking and chin scratching. Though the standard had been released in September and shown off at the CES trade show in January, no ecosystem existed. It was hard to know how a single-port USB-C laptop would function in the real world.

In the days following the announcement, cables and adaptors started to be announced and even ship. The MacBook landed in people's hands – including ours at *Macworld* – in mid-April, and I've been purchasing and receiving review versions of adaptors for several days. Here's a rundown of what's currently available and what it can do for you. But first, let's define some basics.

How fast is USB-C? USB-C is a cabling standard that incorporates various versions of numbered USB standards, passes power bidirectionally, and is compatible with VESA's DisplayPort 1.2 and later specifications. In Apple's first use in the MacBook, the maximum data rate is 5Gb/s.

Doesn't USB 3.1 support 10Gb/s? Yes, but that mode isn't mandatory. Apple has

implemented a perfectly acceptable version that's only 5Gb/s and called USB 3.1 Gen 1, which is effectively a rebranded USB 3.0 (SuperSpeed). Future versions of laptops from Apple and other companies will certainly offer the full potential speed under the standard USB 3.1 Gen 2 and the brand name SuperSpeed+.

What's the difference between a power and sync cable? Apple ships the MacBook with what it's calling a charging cable with USB-C male connectors on both ends. It's designed to pass power using USB-C standards, which allow for up to 100W, and the MacBook has a 29W adaptor. However, data on this cable only works using the USB 2.0 standard.

Does USB Type A only carry USB 2.0? Just to make things harder, no. Some USB cables with a Type A connector can carry USB 3.0 data between USB 3.0 ports. You should see SS for SuperSpeed moulded on the correct side up of the male connector if it supports either 3.0 or 3.1

Gen 1 speeds. Cables with SS+ handle 3.1 Gen 2 speeds. However, some early cables merely have the generic USB icon even when they are packaged and work at USB 3 speeds. Right now, I have two nearly identical unbranded cables, one of which is USB 2.0 only and the other USB 3.0. (Apple explains USB-C, its adaptors, Target Disk Mode over USB, and more on a dedicated support page: tinyurl.com/ksaqx7j.)

Apple's adaptors

Apple's USB-C male to USB 3.1 Gen 1 Type A adaptor is designed to support any USB 2.0 or 3.0/3.1 Type A male cable, and in testing, it did. This included a third-party ethernet adaptor that required a Yosemite-compatible driver, discussed in the next section.

Apple's multiport adaptors are ungainly, looking like tiny manta rays, but perfectly functional. Each has a USB-C power-only passthrough port and a USB 3.1 Gen 1

USB-C is a cabling standard that incorporates various versions of numbered USB standards and passes power bidirectionally

Type A female port, just like on the simple adaptor. The centre port is either HDMI or VGA. The ungainly formal names for each adaptor are the USB-C Digital AV Multiport Adaptor and the USB-C VGA Multiport Adaptor.

I tested the HDMI adaptor with both an HDMI-to-DVI and HDMI-to-HDMI cable, and each worked just as expected with an Asus VG248QE, a 1080p (1920x1080 pixels) with HDMI 1.4, DisplayPort, and dual-link DVI-D inputs. The VGA adaptor also tested as expected with a Dell monitor with native VGA support.

I did not have a 4K monitor on hand to test. Apple says resolutions of 3840x2160 at 30Hz and 4096x2160 at 24Hz are supported, and reports elsewhere indicate mixed results with 60Hz monitors or monitors in a 60Hz mode. The USB Type A converter works as expected, as well as with all the cables I tested it with, including some uses I didn't expect.

DisplayPort, USB Type A, and ethernet

Apple's MacBook launch included some confusion, because the company said that the USB-C port it included had 'native' DisplayPort 1.2 video output. But Apple neither sold such an adaptor, nor has it apparently announced any plans to do so.

It fell to arch-rival Google, which just a few days later announced a USB-C to DisplayPort cable. I tested it with the same Asus monitor I mentioned earlier, and it again performed as expected: it worked with no flickering or interference, and setting up multiple monitors on the MacBook through the Displays preference acted as I expected. (A nifty advantage of a multiport input monitor is connecting multiple Macs through different methods, leaving cables attached, and switching as needed.)



Google's USB-C to DisplayPort cable works with the new MacBook.

I wanted to test the C-to-A cables with a USB 3 hard drive, but most drives use the USB 3.0 Micro B jack, and include a cable with that type of plug on one end and a Type A on the other. I was able to confirm via Apple's Type A female adaptor that such an arrangement connects and transfers data at 3.0 speeds. At some point, we expect to see USB-C alongside or instead of Micro B, reducing adaptor and cable types required.

While I had an Apple 100Mb/s ethernet USB 2.0 adaptor on hand, I wanted to bump it up a notch. The Thunderbolt gigabit ethernet adaptor was, of course, not an option, but Cable Matters offers – take a breath – a SuperSpeed USB 3.0 to RJ45 Gigabit ethernet Network Adaptor in Black.

The colour matters when you're trying to figure out the driver to download, because it's shipped different versions of similar adaptors. Yes, this adaptor ships with a CD-ROM and a note to download a driver from the web. Fortunately, ASIX, which makes the underlying hardware for this adaptor, is up to date with an OS X 10.10 Yosemite driver, which installed and worked perfectly at both 100Mb/s and gigabit speeds.

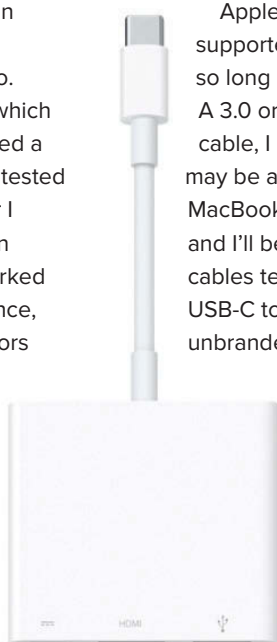
Shape of things to come

Apple's main stumble regarding USB-C is coming out ahead of passthrough cables. Its two multiport adaptors are expensive and shipping late, which will lead to some frustration. There are just a smattering of connectors out now, hinting at the ecosystem yet to come.

It includes almost nothing related to power, which will be where we'll see the most diversity and options, as multiport splitters, power adaptors, and batteries will be produced for many USB-C devices and ostensibly will all be compatible with one another.

While I acquired both USB-C to USB 2.0 Type A and 3.0 Type A cables, these are trickier to test, because of Apple's limited support for USB-based transfer, except with Migration Assistant and Setup Assistant. The 2.0 cable won't work at all between Macs, and because it's a Type A connection at the end, it typically can only plug into 'host' devices, like a computer. Printers, drives, and other peripherals almost always sport a square Type B port.

Apple says that Target Disk Mode is supported with a MacBook over USB so long as the cable is USB-C to Type A 3.0 or 3.1. However, with such a cable, I could not get it to work. This may be a firmware issue in the MacBook's controller or a cable issue, and I'll be testing this further. (The cables tested were Cable Matters USB-C to Type A 2.0 and an unbranded USB-C to Type A 3.0 cable.)



Apple's Multiport AV adaptors let you connect a display, your charger, and one USB device.

Share a Mac's screen

ENSURE TECH SUPPORT CAN SEE YOUR SCREEN WHEN THINGS GO WRONG

By J.R. BOOKWALTER

Part of the beauty of buying a Mac is that it will mostly live up to Apple's classic mantra: "It just works." (At least when compared to systems running Windows, that is. Or when you're trying to set up the new MacBook.) But what happens when it no longer does?

That's generally when the tech support emails or phone calls from family and friends begin pouring in. After all, as loyal Apple users, we practically insist our loved ones also buy Macs, effectively turning us into unpaid Geniuses at the first sign of trouble.

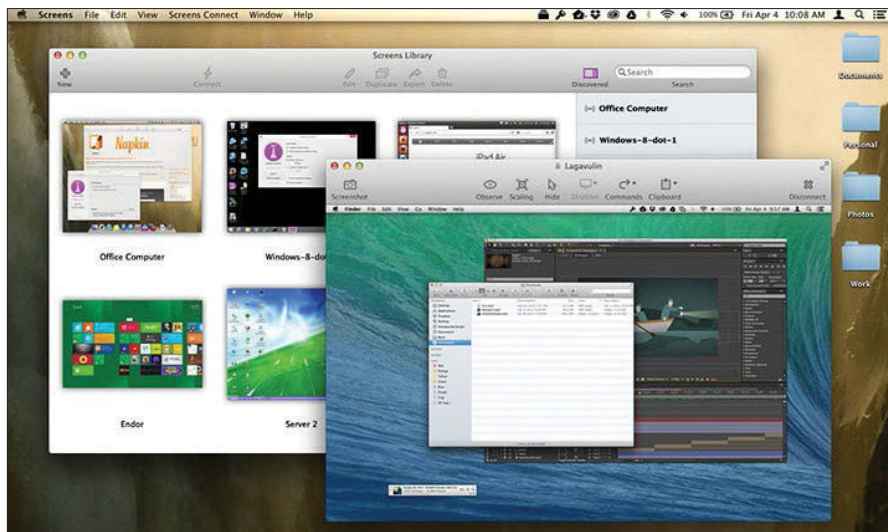
This may not be a problem if the afflicted Mac is in the next room, down the street, or even across town, but what happens when it's located too far away to drive over and offer assistance in person? That's where screen sharing comes to the rescue, offering a remote helping hand from hundreds, or even thousands, of miles away.

Screens to the rescue

One of our hands-down favourite methods for accessing a remote Mac is Screens (edovia.com/screens), a virtual network computing (VNC) solution available for OS X and iOS. With support for clipboards, multiple displays, and a customisable toolbar, Screens is the next best thing to actually sitting in front of a distant computer.

Best of all, developer Edovia offers a free Screens Express utility designed to allow temporary access to any Mac running OS X 10.8 Mountain Lion or later through a shareable link, making it perfect for impromptu tech support calls from loved ones.

To get started, point the owner of the ailing Mac to the Edovia website and have them download the latest version (edovia.com). Once installed, Screens Express will verify that the router is set up



properly, and if not, it will go through the process of opening a public port capable of serving up the necessary incoming remote connection.

The remote user will need their administrator username and password to allow such configuration to take place, so be prepared for at least one phone call prior to being able to log in. (Edovia also has an extensive Troubleshooting section on its website for tough cases where UPnP or NAT port mapping is disabled or unavailable, including a Google search form tuned to specific router brands and models.)

Making the connection

Once Screens Express is actually running, the remote user will see a green dot and the words 'Configuration successful', along with a button to share a link to the Mac in question. Clicking this button opens the built-in Share options, which include Mail, Messages, Twitter,

Screens 3 is the closest thing you can get to sitting in front of a remote Mac, but you'll pay handsomely for the privilege.

Facebook, and any other services configured on that system.

Email and text messages are the most direct of the available options, so have the remote user send one to you, and then click or tap that link to open Screens at your end and initiate the connection.

The remote user will need to authenticate the connection by clicking the Share Screen button that pops up, and within a moment, their screen should appear on your Mac or iOS device.

The beauty of Screens Express is that the remote user remains in full control of the experience: They can close the connection at their end, or choose to create a new link whenever the utility is launched for extra security.

Although Screens is one of the fastest and easiest ways to get connected, there

Edovia offers a free Screens Express utility designed to allow temporary access to any Mac running OS X 10.8 Mountain Lion or later

are a couple of potential downsides. For one, the Mac and iOS apps are not cheap (£22.99 and £14.99, respectively), although we consider them indispensable even for infrequent use. Also, the remote Mac will need to be of fairly recent vintage – this tip won't do much good for anyone still rocking an older Mac running OS X 10.7 Lion or earlier.

The free option

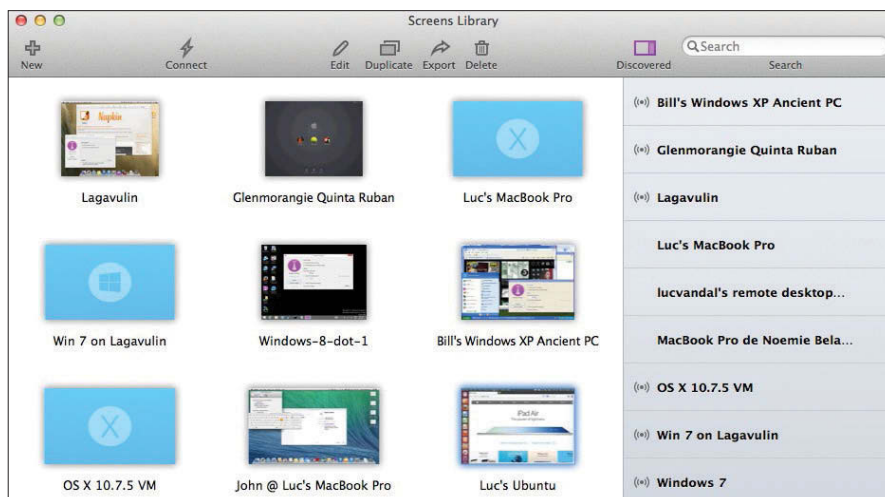
If you can get by with a less elegant (and therefore less expensive) screen-sharing option, there's another tool for the job, and it won't cost a penny – at least for noncommercial use, which definitely applies in the case of homegrown tech support for family and friends.

TeamViewer (teamviewer.com) is actually equivalent to a Swiss Army knife for remote support, offering screen sharing as well as the ability to video-chat, share presentations, and transfer files between systems. Best of all, the software requires no login – TeamViewer connects using nothing more than a nine-digit ID code and randomly generated password.

To begin, download and install the full version of TeamViewer (tinyurl.com/Lkrqk9d) on your own Mac first, then instruct your family member to do the same for the TeamViewer QuickSupport version, a stripped-down edition optimised for instant support and minimum fuss. Have them make note of the unique ID and password, then enter those credentials under the 'Control Remote Computer' section of your own installation, making sure the Remote Control option is selected.

TeamViewer may not be a glamorous option, but it definitely gets the job done in a pinch, and it works great with older Macs. The company even maintains download links for previous versions (tinyurl.com/3z9s3hc), which allowed us to connect to an early 2005 Power Mac G5 stuck on Mac OS X Leopard 10.5.8 – just the kind of trustworthy relic a

TeamViewer gets you connected to a remote Mac with a minimum of effort.



longtime Mac user might pass down to a family member.

When all else fails

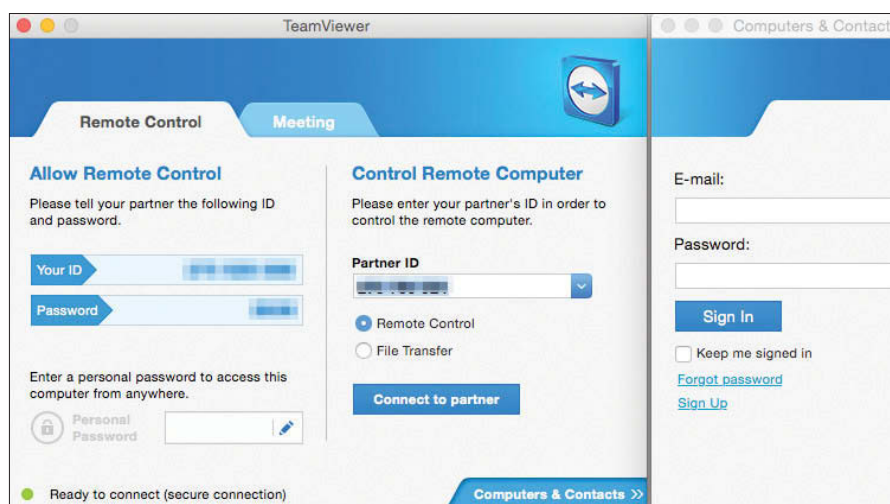
As great as Screens or TeamViewer may be, software-based options won't do a thing to help in cases where the Mac in question refuses to start or is having other hardware-related issues. Those are generally cases in which the system will require a trip to the local Genius Bar anyway, but it would be nice to remotely diagnose such problems beforehand first.

If your distant relative has the same good taste in Apple products you do, chances are they also have an iPhone, iPad, or even iPod touch lying around – and if they do, FaceTime makes a pretty great down-and-dirty tech support system. (In a pinch, Skype, Google Hangouts, or similar VoIP services will work, even from Android smartphones or tablets.)

Screens 3 keeps a library of available Macs, which can include those in your local network as well as remote systems.

Make a FaceTime connection the usual way, have your family member switch to the rear camera, and then guide them through pointing the iOS device in the general direction of the troubled Mac. This also works great for technically challenged family members and friends unable to install the necessary client software for our previous solutions, assuming they can hold the device steady and close enough to make the screen readable at your end.

One final word of advice: If you're helping a loved one purchase and set up a new computer, install the necessary client software for remote access at the same time! You'll thank yourself when the inevitable first late-night support call comes through.





Activity Monitor



AirPort Utility



Audio MIDI Setup



Keychain Access



Migration Assistant



ColorSync Utility



Console



Digital Color Meter



Disk Utility



Terminal



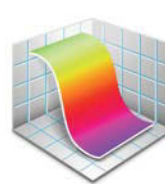
System Information



Grab



Bluetooth File Exchange



Grapher



Boot Camp Assistant

In praise of the Utilities folder's unsung heroes

FROM STAPLES SUCH AS DISK UTILITY AND ACTIVITY MONITOR TO ONCE-IN-A-WHILE LIFE SAVERS INCLUDING GRAB AND MIGRATION ASSISTANT, OS X'S UTILITIES FOLDER IS A GOLD MINE

By Jason Snell

The other day my daughter was frustrated by her maths homework. She was plotting x and y coordinates on to a grid, but a few of her answers just didn't line up. I suggested that we check her work, and in the back of my mind I recalled that there might be a quick way to do that right on my Mac.

The app in question is **Grapher**, a utility that has been installed on your Mac since 2005. It is one of the unsung heroes of the Utilities folder. Placed inside the

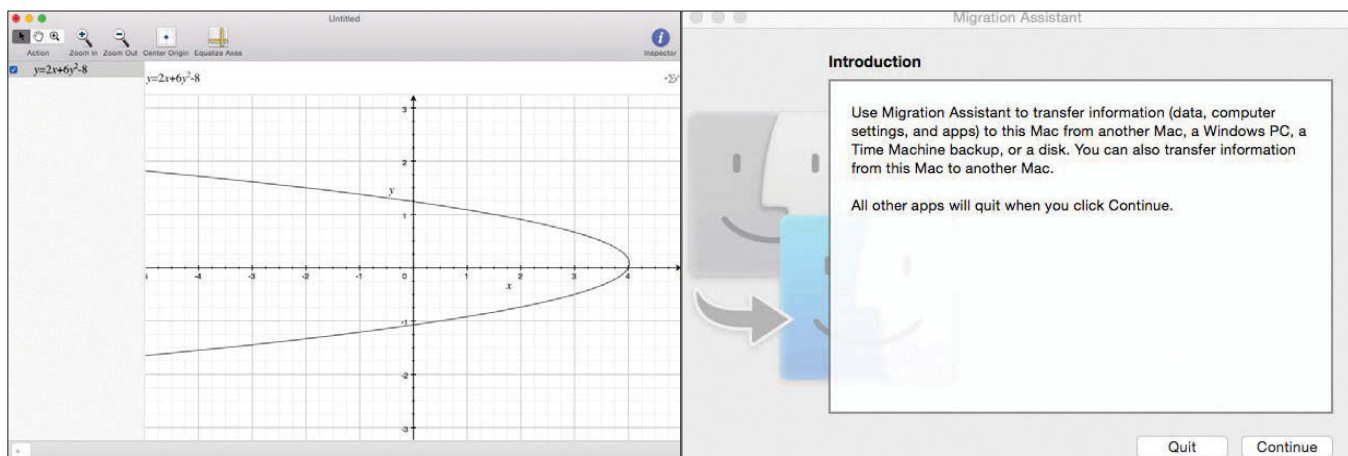
Applications folder, Utilities is the subfolder where Apple banishes apps that it wants to keep as a standard part of OS X without giving them the exposure that the main Applications folder supplies.

Grapher is a tool for graphic equations. It's got a lot of complex modes in both 2D

and 3D, but for my daughter's simple eighth-grade math problem we used the most basic of 2D graphs. Type in an equation and Grapher graphs it.

If you didn't know that Grapher existed, would you know to look for it? Such is life in the Utilities folder.

Utilities is where Apple banishes apps it wants to keep as a part of OS X without giving them the exposure the main Applications folder supplies



Can we graph it? Yes we can.

Unlike more stellar stock apps such as Calculator and Chess (both living large in Applications), Grapher must live in the relative obscurity of that subfolder. But it shares space with some pretty great apps, including Activity Monitor, one of the apps I use the most.

Activity Monitor keeps me informed about how my Mac's processor, networking, memory, and storage are doing. Also shining in the Utilities folder: **Disk Utility**, which lets you format and partition disks as well as create disk images; **Migration Assistant**, which aids in transferring data from your old Mac to a newer model; and **Terminal**, the app that gives you access to all the power of the Unix command line.

There are still a few oddballs, though. **Keychain Access** is where OS X stores a

lot of saved passwords, including the ones from Wi-Fi networks. If your Mac remembers the password to a Wi-Fi network but you've forgotten it, you can look it up using Keychain Access. Just search for the access point's name, click on the network in the list, and type ⌘-I or click the "i" button at the bottom of the window. Check the Show

.....

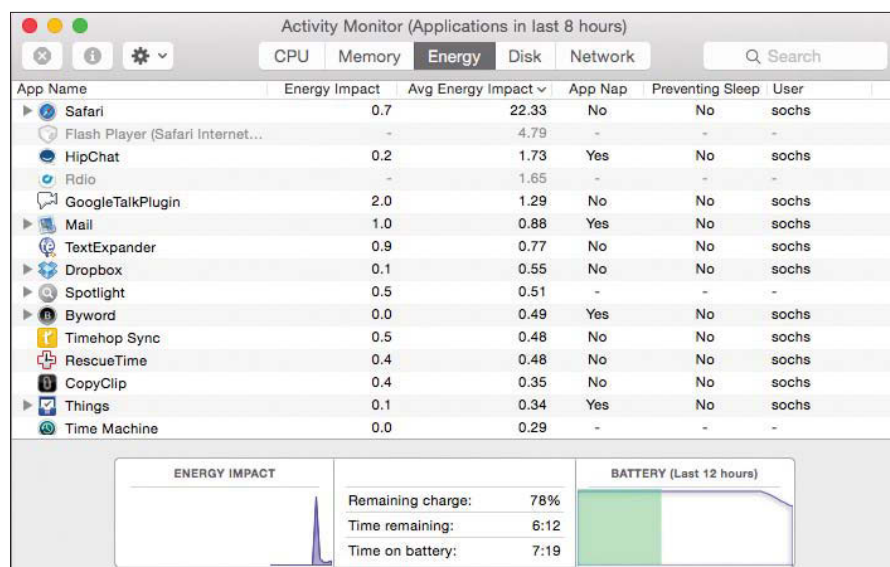
Grapher is a tool for graphic equations. It's got a lot of complex modes in both 2D and 3D. Type in an equation and Grapher graphs it

Password box at the bottom of the resulting window, enter your Mac account password, and the Wi-Fi password will be displayed in plain text.

Grab is a screenshot utility that, in the early days of OS X, was really the only

Migration Assistant aids data transfer.

way to get good screenshots. It's long been surpassed by other utilities and the built-in ⌘-Shift-3 and ⌘-Shift-4 shortcuts, but it can still be useful on occasion, most especially for its ability to take a screenshot 10 seconds after you select the Timed Screen command



from the Capture menu. If you need to jockey a Mac's interface into just the right location for a screenshot, that can be useful.

If you're very lucky you may find **QuickTime Player 7** in your Utilities folder, too. The current version of QuickTime Player lacks all sorts of features that the older version still supports, so Apple allows it to kick around in the Utilities folder.

But don't pity the apps that live in /Applications/Utilities too much. After all, it could be worse. Another ragtag collection of apps lives in /System/Library/CoreServices/Applications, including the useful Network Utility, Archive Utility, Screen Sharing, and Wireless Diagnostics. These apps are generally launched from other parts of OS X, rather than by double-clicking, which explains why they're so hidden away.

I use Activity Monitor constantly.

Everything is broken: Why you shouldn't beat yourself up when troubleshooting

I'VE MADE A DECENT TO LARGE PART OF MY LIVING FOR MORE THAN 20 YEARS LEARNING ABOUT HOW TO FIX PROBLEMS AND THEN TRYING TO TELL OTHERS HOW TO FOLLOW SUIT. THIS WEEK HAS BEEN AMONG MY HIGHEST IN TERMS OF FRUSTRATION IN USING COMPUTERS IN MY ENTIRE LIFE. BUT, PER MY MODUS OPERANDI, I HAVE TRUTH BORN FROM A BLOODY FIGHT TO SHARE WITH YOU [By Glenn Fleishman](#)

Recently, I tried to deal with the mystery of why my 2011 Mac mini was taking forever to start up and be ready to use by switching to an external SSD drive, with both FireWire 800 and USB 3.0 built in.

I had more than three weeks of blissful performance with a computer that felt newly rejuvenated, then the honeymoon was over. This story should help those who think that these things only happen to them.

Sluggish behaviour

Recently, I was preparing to tape a *Macworld* podcast when my Mac mini started playing up. Eventually, I had to reboot as I couldn't keep the system working reliably. This was partly because, after a restart and despite the settings in Photos, iCloud Photo Library began uploading again, flooding my network. I therefore tried the following:

- First, I inspected the top -u in Terminal and Activity Monitor to see if the CPU revealed when slowdowns occurred.
- Next, I looked at whether there was unusual disk activity and if the memory was under pressure, both viewable through Activity Monitor.

- I went to *Applications* → *Console* to reveal log entries.
- Then, I held down $\%R$ and ran Disk Utility from the Recovery HD to check the startup partition.
- Finally, I zapped the NVRAM (non-volatile RAM), which holds some system settings can't hurt.

None of these helped. They revealed nothing wrong or unusual. According to every measure I could take, something was undefinably out of kilter, but invisible. There were other tests I could run, but these hadn't helped in years.

I was using third-party RAM to bring the mini to an unsupported 16GB (for the model I have anyway; new Mac minis do support that). The last time RAM was a culprit, it was with a titanium PowerBook and, I believe, OS X Panther. In some cases, non-Apple RAM would fail. You can test the RAM with Apple's built-in diagnostic tools. However, the particular symptoms didn't match, and

I had more than three weeks of blissful performance with a computer that felt newly rejuvenated, then the honeymoon was over

RAM is unlikely to go bad – it happens, but it's rare for it to fail this long after it's been put into use.

I could have turned to third-party disk diagnostic tools that promise (and in some cases deliver) to check various parameters that Disk Utility doesn't, of which there are many, and provide a report and potentially a repair. But given that Disk Utility passed the drives repeatedly and the problems didn't seem familiar from my history with failures over decades, it seemed unlikely.

Instead, I bought a new Mac.

Spinning into oblivion

Here is where I thought my strategy was paying off in using the external SSD drive. I pulled out the old Mac mini, swapped cables, and booted holding down the Alt key, so I could pick the external drive. I thought was back in business.

Unfortunately, I had even worse problems with a machine four years



newer and substantially better in performance than the one it was replacing. Some tears may have ensued. After one restart into Recovery mode and more Disk Utility checking, it turned out that an external FireWire 800 drive was, in fact, unrepairable. It was also four years old, and while drives can last much longer, it's not unreasonable for a drive to fail after that period of time. It's another reason that SSDs will ultimately overtake spinning drives, the same reasons LEDs are replacing incandescent bulbs: reliability and long life.

Pulling that drive off the FireWire chain and swapping the original Mac mini back in brought me back to functional, speedy bliss. For a day at least.

Defaulting to the wrong version

During my transition, I discovered I was missing some emails. I chalked it up to transient crashes, and contacted those I knew had been in touch. I didn't give it enough thought. The next day, I found other anomalies when trying to restart cloning my SSD to the internal mini drive.

SuperDuper! had greyed out the internal drive. I ran Disk Utility and tried to repair the interior drive, but the software told me that it couldn't be repaired because the current user's Home directory was on the drive.

I nearly lost it at this point. What had I done? Why had my computer forsaken me? I checked in Disk Utility and via System Profiler that the SSD was, indeed, the boot drive. Then I used Users & Groups to find out where OS X thought the home directory was located.

When you unlock the padlock for that preference pane, you can Ctrl-click a user name and select the Advanced option. This reveals Unix's details that can be changed, though do so at your peril.

In the Home Directory field it did, indeed, say /Users/glenn, the path that I thought it should have. I clicked Choose, and the directory the folder homed in on was the internal drive's path.

I switched the directory to the SSD's path, restarted, confirmed the right path was in place (and painstakingly merged a day's worth of out-of-sync mail), but the system remained problematic. Disk Utility could now run a repair operation on the internal drive, and while it checked out, it took a long, long time with a number of pauses. Perhaps the internal drive is also about to join the choir invisible? I unmounted it.

Finally, I thought, I could get back to business. But it wasn't to be. While the system remained zippy, I was having pauses while typing in any program – every 10- to 30 seconds a spinning rainbow-coloured ball would appear.

After much more investigation and hoping that I wasn't facing a defect in my new SSD, I looked at third-party software I had installed that might relate to input. Yosemite had caused problems for some people with outdated software – they had horrible problems due to an outdated audio component.

TextExpander was up to date, but Default Folder wasn't: I had 4.7.0, not the latest 4.7.1 installed. While the release notes didn't mention any of the problems I had, I'm always an outlier, and the interaction of many different systems can

cause trouble. I installed 4.7.1. And the problems went away for several hours. Then they returned.

Let's shine a light on it

I finally brought out the big guns and ran the system diagnostics. After churning away with the 'extended' checkbox selected, the report was – everything was fine. Of course, it was: swapping in a different computer didn't seem to improve matters.

I carried out some more tests, which involved ejecting drives and swapping cables, and finally went with a distant hope. Perhaps Spotlight was the culprit. In earlier versions of OS X, I'd often seen Spotlight go nuts and drive all the cores in the CPU, spin up the fan, and wreak havoc. But according to everything I'd checked, including simply watching disk activity lights, mdworker and other associated background processes, weren't to blame.

You can disable Spotlight for specific folders or volumes by exposing the Privacy tab in the Spotlight preference pane and either dragging items or use the '+' to add them through a navigation dialog. I dragged my drives in, including the startup volume, and clicked OK to acknowledge that some programs' search feature might be disabled.

And everything got better for a while, but the hiccups continued. Everything worked fine, but I still had inexplicable freezing for a moment or seconds at a time during which the rainbow ball spun. I purchased and tried out a Thunderbolt 2 dock, which would create USB 3.0 and passthrough DisplayPort and HDMI

output, thinking perhaps an internal bus or speed was an issue, but didn't realise that older Macs with USB 2.0 support won't correctly boot USB 3.0 drives over a USB 3.0 adaptor. So back that went to the store.

However, it was during that final swap that something snapped: FireWire stopped working entirely. This finally provided the missing clue. Moving entirely to USB 2.0 produced a temporarily completely working system with no hiccups and no other trouble – it's just slower than I'd like. My suspicion is that the SATA controller used for the internal hard drive and the FireWire controller for two external ports is linked in some way, and some component went bad. This would explain why the internal drive stopped working correctly and FireWire external devices have also gone wonky.

I decided that the Mac had to be replaced, because goodness knows what else was rattling around in there. I purchased a build-to-order replacement with 16GB – the 2014 Mac mini has soldered-on-the-board RAM, preventing user upgrades from 8GB – and when it arrived, I shut down my current system, swapped all the cables and powered up.

At which point, the external SSD failed. Disk Utility was unable to resuscitate it. You might think at this juncture, I gave up entirely and moved to the country to raise flowers and sob. But, instead, I was able to restore a clone of the SSD that had been made automatically the night before, reboot, and finally get back to business. (The drive is under warranty, and being sent back for replacement,



after which point I hope to clone to it and resume my speedy external drive usage.)

Restarts will continue until morale improves

Do I have a moral of the story? You can see one: I should definitely get and be using more advanced disk diagnostic software, having had one to three drives fail on a system I use every day and then having what appears to be two entire interface types failing. Testing for faults also involves removing variables. When I first started having weirdness that I couldn't pin down on the system or software, I should have

isolated drives, even though they exhibited no specific symptoms.

I should also ensure my software is kept up to date; though, the 4.7.1 update of Default Folder came out only a day before I installed it, and I've been using 4.7.0 in Yosemite since it came out without problems. That wasn't the culprit, but it's a good thing to test for.

Unfortunately, I appear to have hit a blind spot in troubleshooting: without having any sign that a peripheral controller was failing, just odd pauses, there was no clear direction to move until an actual total failure occurred. All I know is that I'm deeply exhausted.



Maybe the Mac is a typewriter after all

Apple's innovation push will result in the PC joining the typewriter as redundant technology

Some of my colleagues still type on keyboards designed by Apple in the 1980s. What I'm saying is, some people really care about keyboards. But whether or not you have opinions about keyboards, they're important tools to help us get written language into our digital devices.

AppleInsider recently reported on an Apple patent for a multitouch keyboard that would, if implemented, allow the company to remove the trackpad entirely because the keyboard would itself become a trackpad, with key caps as touch-sensitive surfaces. It's a pretty wacky idea, and plenty of Apple's patents never end up in real products. Companies patent lots of crazy things.

The report got me thinking. With all of the recent complaining about the MacBook keyboard, where is Apple going with text input in the future?

With the MacBook, Apple created the thinnest traditional keyboard it could make in order to minimise the thickness of the overall device. It tried to offset the reduction in key travel with increased clickiness and wider, more stable key caps. Some people love that keyboard, others just don't see what the big deal is, and some (including your faithful correspondent) don't like it.

It's funny that there's so much conversation about the MacBook's keyboard, considering how little we talk about keyboards on iOS devices. iOS supports external keyboards, sure, and of course there are the software keyboards Apple provides for the iPhone and iPad.

In some ways, I feel like Apple's strategy when it comes to text input on iOS devices and this is certainly magnified on the Apple Watch is that keyboards are necessary but not particularly exciting. The Apple Watch, which doesn't have room for a keyboard,



lets you send messages via speech-to-text, or via recorded audio file. Speech-to-text keeps getting better throughout iOS. The future is voice.

I'm not saying Apple is ditching keyboards. There are plenty of times when people are simply not in a position to talk into their phones a keyboard is a simple, quiet way to input text. But put yourself in Apple's shoes and imagine where you want to take your text-input technology over the next 15 years. Is anyone at Apple really imagining how the company is going to evolve the keyboard between now and 2030?

My guess is that Apple views the keyboard as a solved problem. And while keyboards can be improved, they're always going to be keyboards.

As much as I love car and lorry metaphors, and as loyal as I am to my Mac, it's hard not to think of the Mac (and yes, the personal computer category as a whole) as one big pile of old tech, the typewriter of modern digital devices. It operates on an older metaphor, saddled with cursors and keyboards and other accoutrements that were once required but are now optional.

This doesn't mean the Mac isn't powerful. I'd much rather write a novel on a physical keyboard than dictate it

into my phone. But if you're Apple, looking for places to advance technology and create the next big thing, the Mac probably doesn't jump out as a huge opportunity compared to products like the iPhone, iPad, Apple Watch, and maybe even the Apple TV.

When I see a story like the one about the new Apple keyboard patent, I also realise the careful line Apple has to walk with Mac design. Push too far, and your customers won't follow you. If someone wants to buy a MacBook, you can't give them an iPad. If they wanted an iPad, they'd buy one.

Could Apple ditch the trackpad and integrate touch sensors into the keyboard? Sure. It sounds interesting, and the fact that Apple is reportedly investigating such technology shows that there are still engineers at Apple trying to find ways to advance the state of the art of the personal computer.

I also sometimes wonder if Apple might one day try to replace the Mac's keyboard with a multitouch display equipped with haptic feedback. Those of us who are freaked out about the lack of travel in the MacBook keyboard would go nuts if that happened. But would it break the metaphor? Maybe.

At some point, Apple will discover that all its best ideas for Mac innovation push the product too far, making it into something it's not. And on that day I don't think we've reached it yet, but I suspect we can see it from here the personal computer will truly have run out of room. You've got to give Apple credit, though. It's just about the only company who's still trying to find ways to evolve the traditional personal computer. The moment that Apple runs out of road, though, is the moment that the PC joins the typewriter in the box of old technology.

HOW TO USE

Terminal on a Mac

GET MORE FROM YOUR MAC WITH OS X TERMINAL. HERE ARE THE MOST COMMONLY USED TERMINAL COMMANDS [BY KENNY HEMPHILL](#)

Terminal provides a command line interface to control the Unix-based operating system that lurks below OS X. Here's everything you need to know about terminal, and what it can do for you and your Mac.

Of all the tools tucked away in OS X's Utilities folder, few are as misunderstood as Terminal. At first glance, it's the very antithesis of what the Mac is all about. Isn't the whole point of a graphical user interface that we don't need to concern ourselves with learning arcane instructions and typing them on a command line? Well, yes it is, but learning those commands and using them allows you to customise elements of your Mac, perform tasks that would otherwise be cumbersome or require additional software, and troubleshoot quickly when things go awry.

What is Mac Terminal?

The first thing to understand about Terminal is that it's just an application and it lives in the Utilities folder in Applications. You launch it like any other and when you do, you'll see Apple's implementation of a Unix command-line environment, known as a shell. There are various types of shell; Apple uses one called Bash.

The title bar of a Terminal window displays the name of the current user, the type of shell, and the size of the window in pixels. If you look at the command-line inside the window, you'll see that each

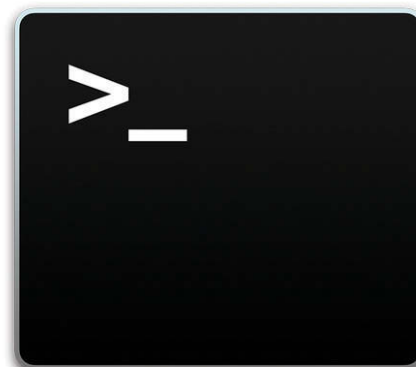
line starts with the name of the Mac and is followed by the name of the current user. The 'cursor' is indicated by a shaded box.

You can run other shells with Terminal, but you'll have to install those yourself. Commands in Unix are shell-specific, so it's important, say when you're following tips written for a different flavour of Unix, that you use the right shell for the commands, or vice versa.

How to use Terminal on a Mac

We're getting ahead of ourselves, however. Using Terminal is simple, you type a command on the command-line and press Return to execute it. A command has three elements to it; the command itself, which calls a specific tool, an option which modifies the command's output, and an argument, which calls the resource on which the command will operate.

Often, the argument takes the form of a specific file, in which case you need to



type the file path at the end of the command. There is a shortcut, however. If you locate the file in the Finder, you can drag and drop it onto the Terminal window and Terminal will extract its path and slot it into the command for you.

There are a few rules that you need to bear in mind when using any command-line interface. One of these is that every character, including spaces, matters. So if you copy a command from a website, magazine, or book, you need to make

The LS command displays the contents of a directory

```

Kenny — bash — 93x26
Last login: Mon Apr 13 11:46:14 on ttys000
Kennys-MacBook-Pro:~ Kenny$ mv ~/Documents/Test/TestFile-copy.rtf ~/Documents/Test2/TestFile-copy.rtf
Kennys-MacBook-Pro:~ Kenny$ ls
Applications
Applications (Parallels)
Cloud Drive
Desktop
Documents
Downloads
Dropbox
IomegaStorageManager-Kenny
Library
Movies
Music
MyBook - Ext Hard Disk Oct-29 09_58.ddscan
Pictures
Public
Sites
SkyDrive
VirtualBox VMs
exception.txt
jahstorage
twonkymedia
younited
Kennys-MacBook-Pro:~ Kenny$

```

The **cp** command is used to copy a file.

sure you type it exactly as it's shown. You can rerun previous commands without re-typing them by using the up arrow on the keyboard to navigate to the command and then pressing Return. And you can interrupt a command by pressing Ctrl-C.

To see a list of available commands, hold down the Escape key and then press 'y' when asked if you want to display a specific number of possibilities. You'll see a list of commands, with their meanings next to them. If you press spacebar more commands will load. Press 'q' to exit and return to a command prompt.

Unix has its own built-in manual and you can call it in Terminal to find out more information about a command. To use it, type `man command`, where 'command' is the name of the command on which you want more information.

When you type a command in Terminal, it's executed in your current location, unless you specify otherwise. When you launch a new Terminal window, that location is at the top level of your Home directory, so every command is relative to that location. To change location, use 'cd' followed by the path of the location you want to move to. To return to the default, type 'cd ~/' and your location will change from wherever you are to your Home directory. You can view a list of the files and folders in your current location by typing 'ls' to list them in Terminal.

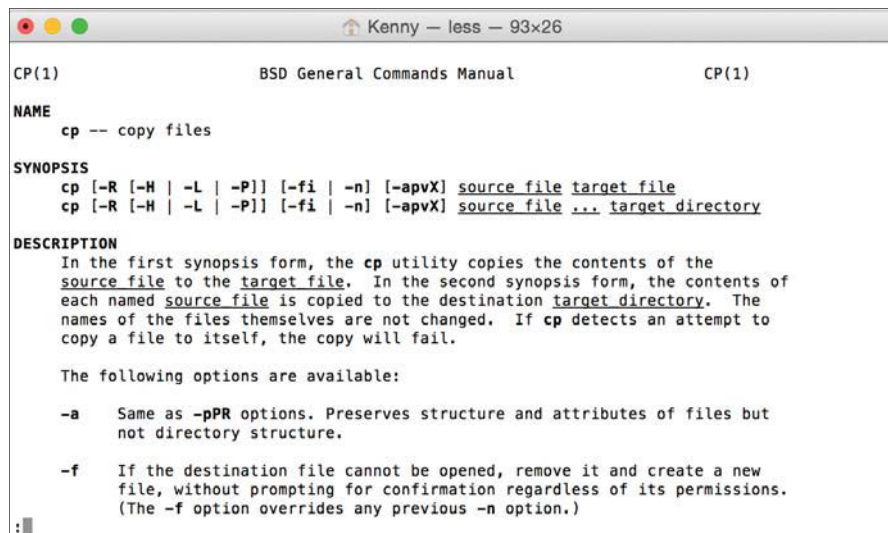
How does the command-line work?

To get an idea of how the command-line works, let's start with some basic commands. Create a file in Text Edit called TestFile and save it to a folder called Test inside Documents in your Home Directory. In Terminal type:

cd Documents/Test

to navigate to the Test directory. Now type `ls` to display the contents of the directory. You should see the result: 'TestFile.rtf.'

Moving a file using Terminal



You can make a copy of the file using the `cp` command. Type:

cp TestFile.rtf TestFile-copy.rtf

Check the result in the Finder. We're now going to use Terminal to move the copy to another directory, which we'll also use Terminal to create.

Type 'cd', then drag your Documents folder onto the Terminal window and press Return. That will place you in the Documents folder in your Home Directory. Now type 'mkdir Test2' to 'make' a new directory called Test2. To move the file TestFile-copy.rtf to the Test2 directory, type:

mv ~/Documents/Test/TestFile-copy.rtf ~/Documents/Test2/TestFile-copy.rtf.

The '~' is shorthand for your Home directory, so '~/Documents' is the Documents folder in your Home folder. You can also use the `mv` command to

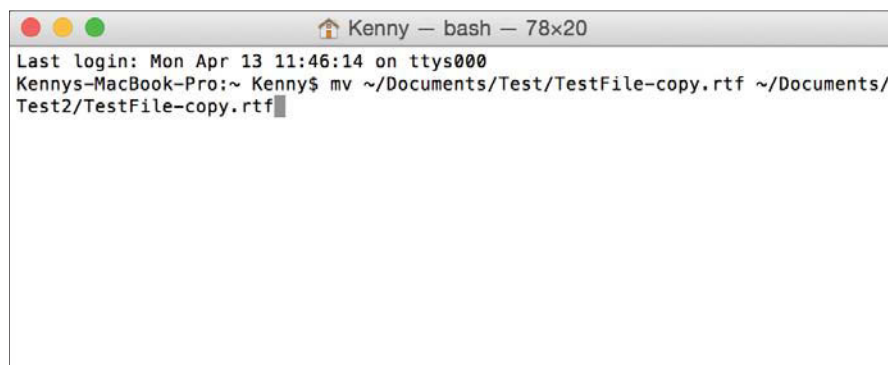
rename files. So, in our example above, instead of TestFile-copy.rtf, you'd give the moved file a different name. To rename files without moving them, just remove the second directory from the command.

To delete the test files, use the `rm` command. So, to remove our original test file, we'd type:

rm ~/Documents/Test/TestFile.rtf

That will delete the file without asking for confirmation. If you're deleting files, it's good practice to double-check, so to add a confirmation step put `-i` immediately before the file name.

Those are just a few of the most commonly used Terminal commands. But the should give you a flavour of how to use this most under-appreciated of OS X utilities. It should also show you that there's nothing to fear in using Terminal, so long as you take the time to learn the basics and understand what your doing.



Reviews

From £1,049

inc VAT

Contact

■ apple.com/uk

Specifications

15.4in (2880x1800 resolution, 220ppi) LED-backlit widescreen display; OS X Yosemite; 512GB PCIe-based flash storage; 2.5GHz quad-core Intel Core i7 processor (Turbo Boost up to 3.7GHz) with 6MB shared L3 cache; 16GB of 1600MHz DDR3L onboard memory; Intel Iris Pro Graphics; 720p FaceTime camera; 802.11ac Wi-Fi networking; 4 IEEE 802.11a/b/g/n compatible; Bluetooth 4.0; 1x MagSafe; 2x Thunderbolt 2; 2x USB 3.0; 1x HDMI; 1x headphone; SDXC slot; 18x358.9x247.1mm; 2.04kg

Macworld



EDITORS' CHOICE

Apple 15in MacBook Pro with Retina display (2.5GHz, mid 2015)

The new 15in MacBook Pro for 2015 has arrived, picking up a trio of component upgrades on the way. Apple's best laptop features the same design and layout as the first Retina notebook that launched in 2012, and once again two models are available - here we focus on the top model with 2.5GHz processor and AMD graphics.

Apple pioneered the trackpad on laptops back in the early 1990s, when Windows laptop factories were still fitting upside-down-mouse trackballs or little rubber pointing sticks in the middle of the keyboard. The trackpad is now all but ubiquitous as the way to interact with every notebook computer of any faith.

Under Apple's stewardship the concept has seen trackpads grow larger in size, increase in precision and sensitivity, and notably gain multi-point touch recognition to allow new hand gestures to guide the user through a computer's GUI.

The new Force Touch trackpad is something of a departure though, and even though the trackpad looks identical on the surface, it is now a fixed, essentially unmoving construct, relying on strain gauges, electromagnet solenoids and additional processors and algorithms to do its work. Superficially, the same as it was in the first Unibody MacBook of 2008 it may be, but still waters run deep.

As we found with first the 13in MacBook Pro and then the new little MacBook, the Force Touch trackpad allows you to control the strength of the 'click' for normal clicks (Light, Medium, Firm); and additionally to register an extra, deeper click when you press slightly longer and more firmly.

The Force Touch concept works well on the MacBook Pro, allowing you to deep click on the fast-forward and rewind buttons in QuickTime Player, for example. The harder you press, the faster the speed-up. Another useful benefit, if one



that takes some mental training to get used to if you've been driving trackpads for years, is that you can press anywhere on the trackpad surface with equal pressure to elicit a click, rather than along just the front edge.

Graphics

Apple does not seem too partisan when it comes to favouring either of today's two makers of PC graphics processors, tending to oscillate between fitting either nVidia or AMD's graphics adaptors. Since the 15in MacBook Pro with Retina display was introduced in 2012, there has been a build using discrete nVidia graphics in addition to low-power integrated Intel graphics, starting with the nVidia GeForce GTX 650M for the Mark I; and for the last two refreshes, the slightly better GTX 750M.

Now we see the pendulum swing back to AMD, with the inclusion of a Radeon R9 M370X graphics processing unit. It is fitted with 2GB of GDDR5 video memory, the same quota as the outgoing nVidia part.

You won't find this AMD graphics processor on other laptops though as the part seems to be custom-built for Apple. Note that like all GPUs that Apple has fitted to its professional-label MacBook Pro notebooks ever since the line was launched in 2006, the 2015 MacBook Pro takes a consumer-grade graphics adaptor, here bearing the Radeon name.

The AMD Radeon R9 M370X looks to be based on a 28nm architecture codenamed Cape Verde that dates back to 2012, and this particular version runs an 800MHz GPU clock, 1125MHz memory clock (4500MHz effective speed, after the quadrupling properties of GDDR5 RAM) and 128-bit memory bus. It has 640 stream processors for parallel processing and 40 texture mapping units.

Comparing with nVidia's graphics is not easy as its architecture is slightly different, with a specification listing shading units (384) and render output processors (16) besides a count of 32 texture mapping units. However, the previous nVidia GTX 750M did have a slightly faster core-clock speed of 926MHz, the same size 128-bit memory bus, and a faster memory clock of 1254MHz (or 5016MHz effective).

Apple reports that the new AMD graphics are faster than the outgoing nVidia solution, and these claims were borne out in our testing in every instance, up to and including a 70 percent performance increase in one game.

Before the graphics benchmark results, it's worth reiterating that the CPU is the same as when we last tested the breed in summer 2014. We ran the usual processor tests anyway as part of our comprehensive routine to ensure nothing unexpected had arisen, and found figures that were within 1 percent tolerance of last year's

results. This means a single-core Geekbench 3 score of 3717 points, rising to 14,325 points in multi-core mode; Cinebench 11.5 with results of 1.54- and 6.41 points respectively for the two modes; while Cinebench 15 reported 132- and 602 points.

For reference, Dell's comparable copycat computer is the Precision M3800, which runs an Intel Core i7-4712HQ at 2.3GHz, and gives benchmark scores around 5 percent slower in Cinebench, and up to 18 percent slower in Geekbench.

Cinebench will also test graphics rendering performance with an OpenGL routine, and in our tests of the mid-2015 MacBook Pro with its new AMD graphics we found 12.5 and 16 percent improvements over the previous nVidia model. Specifically, Cinebench 11.5 framerate rose from 48- to 54fps, while Cinebench 15 advanced from 54- to 63fps.

Turning to gaming, we started with Batman: Arkham City and found it would play around one-third faster. At the low setting of 1280x720 pixels and Medium detail, nVidia gave us 61fps, while AMD played at 83fps (36 percent faster).

Set to 1440x900 size - arguably the best resolution for this MacBook Pro's 2880x1900-pixel display - the game rose from 50fps through nVidia GeForce GTX 750M, to 66fps through the AMD Radeon R9 M370X, for a 32 percent improvement.

Unigine Heaven is a synthetic gaming benchmark, and here the AMD graphics showed around 20 percent improvements on the previous nVidia - moving from 35 to 42fps (1280x800, Medium), and from 29- to 35fps (1440x900, Medium).

Most impressive gaming performance lifts were found in the 2013 reboot of the classic Tomb Raider game. In our experience testing Windows machines, this game typically works better through AMD graphics hardware - right down to the added TressFX graphics API for DirectX, which optionally shows Lara's hair more realistically, each strand rendered separately with the help of the AMD Graphics Core Next architecture. Sadly this feature has not been ported to the OpenGL version of Tomb Raider for Mac.

Set to a modest 1280x800-pixel resolution and Normal detail, framerate was lifted from 40fps under nVidia to 65fps under AMD

(63 percent faster). At 1440x900, Normal detail moved from 33- to 56fps (the vaunted 70 percent improvement) and from 31- to 49fps at High detail (or a 58 percent lift).

With the help of QuickRes (quickresapp.com,) we also pushed the graphics to their size limit, expanding screen resolution beyond what OS X normally allows, to the MacBook Pro's native 2880x1800 pixels. At this point you cannot expect to have playable framerates from anything but the best graphics cards. For the nVidia 750M, it averaged nine frames per second in Tomb Raider, while the AMD R9 M370X showed us a much better, if still too slow, 18fps. That's what statisticians and marketeers would call a 100 percent improvement.

Performance

We've already seen some significant improvements in storage performance in this year's Apple Mac refreshes, building on the 2013 refresh when Apple kicked out SATA and introduced PCIe-attached flash drives to the world.

This year saw this strategy developed again by the use of four rather than two lanes of PCI Express. So in the case of the new 13in MacBook Pro with Retina display, sequential read speed from the PCIe-attached flash drive doubled from around 750- to 1500MB/s.

This year's 15in MacBook Pro also gains from the doubling in PCIe bus lanes, again from two to four. But it also adds another trick that takes sequential read speed up to a staggering 2000MB/s. In place of the venerable PCIe 2.0 standard, we now have a flash drive using four lanes of PCIe 3.0. The newer standard has nominal speed of 8GT/s (giga transfers per second), a bump up from the previous 5GT/s of PCIe 2.0.

Using QuickBench, we measured storage transfer speeds in excess of 2000MB/s, peaking at 2077MB/s, and averaging 2050MB/s for data sized 20- to 100MB. Sequential write speeds were lower as is typical for SSDs and averaged 1542MB/s.

Small-file random reads were almost disappointing, the weakest in measurement at 37MB/s for 4kB random reads, while 4kB random writes hit 118MB/s. Averaged across all small files from 4- to 1024kB,

random reads were 533MB/s and random writes averaged 948MB/s.

Let's compare that to 2014's best, which came in at 199MB/s for averaged random reads, and 351MB/s for averaged random writes - roughly a three-fold increase since the last refresh, and one that will really make the MacBook Pro fly in real-world usage.

We have seen a clear evolution in Mac storage performance in the last two years; a revolution in terms of the shake-up to the PC industry. Up until the MacBook refreshes of 2013, the best SATA SSDs had read speeds capped by SATA interface at little over 500MB/s.

Then Apple replaced SATA with PCIe, giving a 50 percent read speed increase to 750MB/s. Then earlier this year it used twice as many PCIe lanes, doubling that 750 figure to 1500MB/s. And now the lanes have been widened to expand the top speed to 2000GB/s.

Considering how PC performance was languishing with little change in storage speed when compared to ever-rising CPU increases roughly in line with Moore's Law, Apple has accomplished much as other PC builders stuck fast with outdated data-transfer technologies.

Battery life

Last year's MacBook Pro (Retina, 15in, Mid 2014) with the same 2.5GHz Core i7 processor lasted for seven hours 57 minutes, in our test of streaming an MPEG-4 HD film over Wi-Fi, with screen set to 120cd/m² (an 11.75 setting on the 0-16 brightness range available through OS X).

This year's model with the same CPU ran for eight hours 58 minutes, which we're happy to call 'nine-hour battery life'. If we had to guess the 'how', we'd wager it was either improved power-saving techniques in the Samsung-made flash drive controller; reduced quiescent current draw from the AMD graphics processor; or it could be a little of both, combined with some under-the-bonnet changes in the OS.

Macworld's buying advice

Apple's latest 15in Retina MacBook Pro maintains its place as the premium mobile workstation laptop, and puts that much more clear distance between it and the Windows tributes. **Andrew Harrison**

From £1,599

inc VAT

Contact■ apple.com/uk**Specifications**

27in (5120x2880) Retina display with IPS technology; 3.3GHz quad-core Intel Core i5 processor (Turbo Boost up to 3.7GHz); 8GB (two 4GB) of 1600MHz DDR3 memory; four SO-DIMM slots, user accessible (configurable to 16GB or 32GB); 1TB (7200rpm) hard drive (configurable to 3TB hard drive), 1- or 3TB Fusion Drive, or 256GB, 512GB or 1TB of flash storage (SSD); FaceTime camera; 1x headphone; 1x SDXC; 4x USB 3.0; 2x Thunderbolt 2; gigabit ethernet; 802.11ac Wi-Fi wireless networking; IEEE 802.11a/b/g/n compatible; 516x650x203mm; 9.54kg



iMac with Retina 5K display (mid 2015)



When Apple launched the first iMac with Retina display last October, it stood alone in terms of competition from the usual Windows suspects, since no PC maker had anything close in design and performance.

But it was also launched as a solitary model in the Apple catalogue, listed as just one standard configuration, although there was some limited scope to upgrade to better processor, graphics, storage and memory.

Now in June 2015, we have an additional off-the-shelf Retina 5K iMac with £400 shaved off the £1,999 (now reduced to £1,849) price of the original. Your £1,599 can buy an iMac with the same ultra-high resolution screen and all the usual trimmings, with savings made this time in the main Intel chip, the storage and graphics.

Build and design

In every respect this is the same iMac with Retina 5K display, using the same chassis with the same formidable build quality, and the same line of ports and connectors

along the back. There's two Thunderbolt 2 ports for high-speed peripherals and external displays, four USB 3.0, gigabit ethernet, and slot for SD cards up to SDXC specification and a headphone jack.

In place of the 3.5GHz Intel Core i5 quad-core processor is a slightly slower processor clocked at 3.3GHz. It's from the same generation, a Core i5-4590 instead of Core i5-4690. Both chips have separate processor cores on the same die, and include Intel Turbo Boost 2.0 technology which here mildly overclocks up to 3.7GHz, where the faster processor can reach up to 3.9GHz.

These are regular four-core chips. In both cases the processor is fixed at working on four threads, in contrast to the mobile-class processors found in most variants of Apple MacBooks, which include Hyper Threading Technology to give the effect of doubling the number of real cores. The memory quota and specification is the same as before, 8GB from two 4GB SO-DIMM modules, and you can easily upgrade this yourself from a removable hatch on the back

In our tests of the main processor, we saw close to the same speed as from the 3.5GHz processor, with benchmark scores around 5- to 6 percent lower.

From Geekbench 3, the new iMac with 5K Retina scored 3699 points with one core, and 11,792 while running four cores. Those figures are around 5 percent lower than the 3877- and 12,418 points from the original iMac 5K.

Cinebench 15 scored the 3.3 GHz iMac with 134 and 515 points for its two modes, this time 6 and 5 percent behind the first model's scores (143- and 544 points respectively). The earlier version of Cinebench 11.5 reported the same story, dropping 5 and 6 percent (1.64 down to 1.56 points, and 6.15 down to 5.79 points).

Graphics

At first glance, we have the same graphics processor driving all those 14.7 million pixels with 60 refreshes each second. But there's something different in the designation, a certain X missing from the end of the device's name. Where the first iMac 5K sports an AMD Radeon

R9 M290X, the second has an R9 M290. Technical differences between them are not revealed and we've asked Apple if it can explain how they are different.

Until we hear more, and based on the tiny measured differences in performance between GPUs, we'd guess it could be something as minor as a difference in the core or memory clock speeds.

Graphics processors can be 'binned' by selecting the best silicon from the fabrication process at time of manufacture, and setting these parts to run with the highest clock speeds. Those parts that don't work with stability at the top speeds are set at slower clock speeds, and used in lesser graphics cards.

As with Intel processor performance, the change of graphics processor see a small drop in the results we measured from the original 3.5GHz iMac 5K. Batman: Arkham City at 1920x1080 pixels and High detail still played perfectly at 84 frames per second, where first model managed 89fps.

When pushed to a Retina-mode resolution of 2560x1440 however, we saw a more significant drop in framerate, even if 66 instead of 85 fps is still perfectly usable to play the game without visible glitches.

Tomb Raider was strangely faster at full-HD resolution when played on the new 3.3 GHz model, averaging 64fps against 59fps, for a nearly 7 percent improvement. But pushed to 2560x1440 size again it fell back by 10 percent, hitting 42fps instead of 46fps from the original 5K iMac. The Unigine Heaven synthetic game benchmark was similarly around 10 percent down, but still able to play the test at 27fps even at 2560x1440 and Medium detail.

Cinebench's OpenGL test pushes the graphics processor while rendering an animated car-chase scene, and here the new iMac was just 1.4 percent behind the original in version 15 (90.4 versus 91.7fps); and again we saw an anomaly where the non-X-rated iMac turned in a higher score in the older 11.5 benchmark (56.3- beating 45.1fps, for a 20 percent better score in the cheaper Mac).

Storage

As standard the original iMac with 5K Retina display comes with a 1TB

Fusion Drive, a hybrid flash and disk system that works seamlessly to give you most of the benefits of a fast solid-state drive, and the bulk capacity of a traditional hard disk.

The new entry-level version iMac is equipped with just a simple 1TB disk, which does make this model feel slower in general use. Start-up time is lengthened, even if this yardstick from the Windows PC world is almost insignificant here since Macs excel at sleep mode; and don't demand restarting every Tuesday to apply weekly security patches from Microsoft. But there is some inevitable lag in the system interface, noticeable when applications take a few more bounces in the Dock before they launch.

The Seagate hard disk inside this new iMac is fast though as disk technology can allow. With the drive nearly empty, it could reach sequential speeds up to around 210MB/s (with reads and writes effectively the same speed); the drag really starts to show when multiple demands are made upon the disk drive, and in small-file random read/write speeds. Averaged with data from 4- to 1024kB, we saw speeds of around just 30MB/s.

Compare this to the PCIe-attached flash drives in other Macs, which would average around

300MB/s in the same latter test - a ten-fold difference in speed, which would be even marked when the queue-depth (number of paralleled storage I/O operations) is increased.

That's not to say the disk-only iMac is too retarded to use comfortably. However if you're used to using a MacBook Air, for instance, you may find a disk-based iMac even with its 3.3GHz quad-core processor may feel subjectively a little slower in daily use.

Macworld's buying advice

For a pound under £2,000 the first iMac with 5K Retina display actually offers decent value, especially with nothing like it to compare, short of gaffa-taping a 4K UHD display onto a Windows tower PC. The new entry version undercuts it by a useful £400, bringing only around 5 percent slower application and 10 percent graphics performance. It does lose out with the slow disk-only storage though, so you might like to consider configuring it with a Fusion Drive or pure 256GB flash drive, either option adding £160 to the price.
Andrew Harrison



From £299

inc VAT

Contact

■ apple.com/uk

Specifications

WatchOS; 1.32in (340x272) screen; 1.5in (390x312) display; Apple S1 chip; 8GB storage; IPX7-certified water resistant; Ambient light sensor; accelerometer; gyroscope; heart rate sensor; Bluetooth 4.0 Low Energy (LE); Wi-Fi 802.11b/g/n 2.4GHz (system use only); claimed battery life of 18 hours; 38.6x33.3x10.5mm or 42x35.9x10mm; 25- to 69g



Apple Watch

The Apple Watch is the tech giant's first new product category in five years. The obvious question is whether it can make an impact as great as that of 2010's market-changing iPad. Early sales have been strong, but it remains to be seen whether Apple's influence will be enough to reinvent the wearable market, and make it mainstream.

Design

The Apple Watch is beautifully designed and engineered, with a great look and feel. Its chunky body is faintly reminiscent of – although much smaller than – the original iPhone, yet simultaneously modern-looking. The Apple Watch is also comfortable on the wrist.

Three designs are available – Apple Watch, Apple Watch Sport and Apple Watch Edition. Each of these is available in two wrist sizes – 38- and 42mm. The underside of the watch is convex: it bulges outwards slightly. The watch will still sit pretty flat, with that curved section pressing slightly into your wrist, but there will be gaps between the skin and watch/strap at the top and bottom of the watch's body. This effect is more pronounced with the 42mm model, and will also vary from person to person.

We found that the Apple Watch was heavier to wear than our old traditional watch, but we quickly got used to it; and to be honest, it's not as heavy as we expected.

Other than the touchscreen, you can interact with the Apple Watch via two hardware controls. There's a largish protruding dial on the righthand side of the watch, which Apple calls the Digital Crown; this echoes the design of traditional watch crowns, and can be turned to scroll through onscreen options, or pressed to switch on the screen, confirm a choice or go to the Home screen. There's also a side button underneath the Digital Crown, which calls up your favourite contacts for quick calls and texts, and also lets you power off the device.

The Apple Watch is rated as water- and splash-resistant to the IPX7 standard, which means it should survive in water up to a



depth of one metre for up to 30 minutes. Wearing it in the shower is therefore fine, but Apple officially advises against taking your watch swimming, even though plenty of people have done exactly that.

Display

The 38mm Apple Watch has a 1.32in screen with a resolution of 340x272 pixels, while the 42mm model's 1.5in screen is 390x312. Both models therefore have a pixel density of 326 pixels per inch: that's sharp, with no visible pixellation. It's also pleasingly bright and vividly colourful.

The touchscreen aspects work well too: the Apple Watch is highly responsive, and after a little testing we found we preferred to swipe through screens even when a scrolling option was available via the Digital Crown.

The display is also able to determine how hard you touch the screen. It can distinguish between a regular tap, used to select things, and a harder press (or Force Touch), used to access contextual menus.

User interface

While scrolling is smooth and the touchscreen responsive, there are so many ways to trigger particular actions that some testers have

found it a bit complicated. It's not always clear whether you should tap, scroll, swipe or push.

The watch will notify you when you receive emails from VIPs, text messages, and other information on your iPhone. It does this with a sound effect, much like an iPhone, but it also 'taps' you on the wrist. These taps feel peculiar until you get used to them, but they do their job: they're difficult to ignore.

You can control the Apple Watch using Siri, which will switch on when you press and hold the Digital Crown or use the command: "Hey Siri". You can place calls, set alarms, ask for directions, check football scores and cinema listings, and launch apps.

Voice control is also an option when responding to a text, if you don't want to choose from the list of pre-written replies. Siri will attempt to convert your speech into a written reply – which isn't always perfect, but in quiet surroundings we've been generally impressed by its accuracy. Alternatively, you can just send the unconverted audio.

The Apple Watch runs apps, much as the iPhone and iPad do, but these are heavily cut down for the miniature interface. Apple has shrunk down some of the most common apps, including Messages,

Mail, Weather, Calendar, Maps, Passbook, Music and Photos, and there's already a wide range of third-party apps. The watch can't, however, run Safari.

Fitness

For many Apple Watch owners, the most appealing and frequently used apps will be the two preinstalled fitness offerings.

The first of these, Activity, tracks your movements throughout the day. It records calories burned, the number of minutes spent exercising briskly, and how much you've been standing up - all of which is displayed through a simple interface.

You can set the device to ping if you haven't stood up for the first 50 minutes of an hour, which has got us out of our seats a little more, and the video-game-style achievements you get for meeting or exceeding targets on multiple days are silly but motivating, too.

We've found, however, that the Stand ring is sometimes hard to convince that you are indeed standing up: jumping around a little generally does the trick.

For more dedicated exercise sessions, the Workout app comes into its own. This is a more conventional fitness tracker app, measuring and recording how far you've run, your pace and heart rate, and the calories burned. It's pleasingly frictionless and quick to get going, particularly once you've used it a few times - the app will remember the target you set last time and allow you to jump straight to that if you wish.

Accuracy is a problem at first, since the Apple Watch doesn't have built-in GPS, but it can piggyback on the GPS of a nearby iPhone: spend 20 minutes running with both Apple Watch and iPhone, and it'll calibrate itself, learning vital information about your stride length. This is supposed to improve accuracy for future runs, and our experiences bear this out.

Before calibration a 5km treadmill run was recorded as just 3.8km, and a 5km outdoors run as 4.2km. After 20 minutes of calibration with iPhone and Apple Watch together, a third 5km treadmill run came up as 4.8km. That's an increase in no-iPhone accuracy from 76- to 96 percent.

Phone calls

You can easily place or answer calls from your wrist by pressing the Side Button and selecting a contact. (Alternatively, you can open the Phone app on your watch and place the call from the Favorites, Recents or Contacts screens.) The Apple Watch includes a microphone and speaker, but you could use a synced Bluetooth headset.

Sound quality in our tests was fine, at least when talking indoors or in quiet settings. It can be difficult to hear, or make yourself heard, in noisier environments.

Maps

The preinstalled Maps application feels like it has a lot of potential. It offers the possibility of discreet turn-by-turn navigation, tapping you on the wrist when a turn is coming up. Our experiences with the app have, however, been disappointing.

One member of our reviews team decided to plot a route to Marylebone, and found that Maps was quite keen to proceed along Euston Road. No thank you, she thought, switching to a different road with a more pleasant back-street route. Sadly, Maps failed to establish a new route to fit these requirements, deciding that our reviewer was still on Euston Road: all the directions it gave from this point on were related to the original, unwanted route.

As usual, your mileage is likely to vary depending on where you test out the Maps app, but we're not convinced that it's bug-free yet.

Battery life

Apple claims that on a typical day, with typical usage, you should get 18 hours of battery life.

In fact, your experience may vary. We had a couple of spectacularly bad days, where the power was all used up by late afternoon, seemingly caused by a few power-hungry apps that made regular contact with the iPhone to update information. But being more careful about the apps that we kept running sorted this problem, and the vast majority of days saw us get through the full 18 hours without coming close to zero percent. Most of the time the watch was on around 20- to 30 percent battery power when we set it charging overnight.

Price

If you're interested in buying the Apple Watch, you'll need to shell out £299 for the entry-level model, with prices going all the way up to an eye-watering £13,500 for the most expensive option.

While £299 might not sound like an extortionate amount of money to spend on a first-generation product, it's unlikely that's how much you'll actually spend. If you want a watch with a more durable Sapphire display and Stainless Steel chassis, you're looking at £479 or more. And don't forget that's for the 38mm display. The Sport model with the bigger display costs £339, while prices for the Stainless Steel Apple Watch with a 42mm display start at £519.

Macworld's buying advice

The Apple Watch is an attractively designed smartwatch - people with a bit of fashion sense might actually choose to wear one - and a lot of thought has been put into creating a software interface that's equally appealing. But you should be warned that it isn't completely intuitive, particularly at first. To an extent this comes with the territory, of course: unlike widely understood smartphone traditions, smartwatch usage conventions haven't been established yet. And in any case, the interface becomes more familiar and user-friendly once you've spent a little time with it.

Is this a device that you really need? The answer to this is no, but we've been struck by the number of small conveniences that we missed as soon as we stopped using it. **David Price**



£229 inc VAT
Free for existing users

Contact
■ apple.com/uk

Specifications

OS X 10.10.2 or later; 4GB of RAM; 256MB of VRAM; 4.15GB disk space; OpenCL-capable graphics card or Intel HD Graphics 3000 or later

Macworld



EDITORS' CHOICE

Final Cut Pro X 10.2

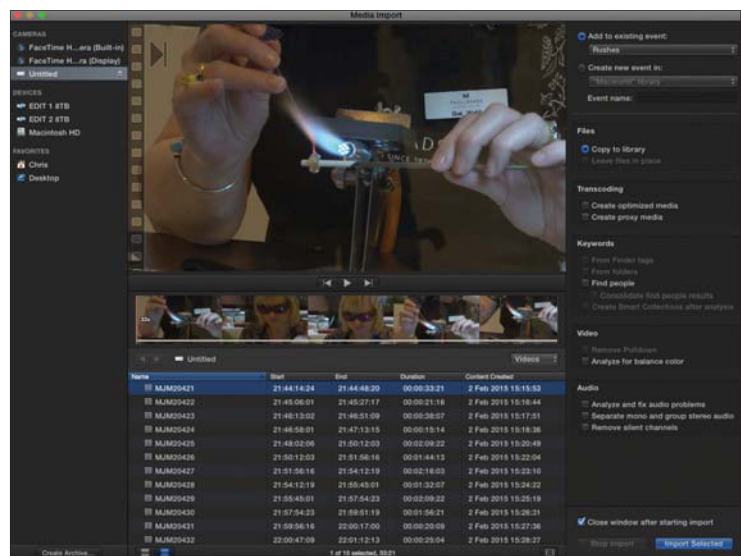
Our last look at Apple's professional video editor, Final Cut Pro X, was not quite a year ago and yet there have been five separate updates since then. (There has been a £30 price hike.) Many of these updates have been bug fixes but there have been some notable enhancements. There are a few headline-grabbing aspects to this latest version, but let's start by taking a look at some of the smaller refinements.

First, the new consolidated import window places all your import options into a single window rather than the separate sheet that opened once you hit the import button. This not only saves an extra click every time you use the import window, but it also means you can quickly make changes here as you're selecting your media for import. It's a small enhancement, but one that makes the import process a little more streamlined.

Apple has also increased the range of formats supported from camera manufacturers such as JVC, Panasonic, RED and Sony. This update also provides support for Sony's XAVC and XDCAM formats without the need of an additional plug-in (including support for the XAVC L format).

Other under-the-hood changes include GPU rendering when using Send to Compressor (making exporting much faster, especially using the dual GPUs on the Mac Pro), faster drawing of audio waveforms to improve performance (I know several people who are pleased to see this) and a resizable filter window when searching.

Another seemingly minor addition is that Smart Collections can now be created at the library level. I've always used Smart Collections to help organise my media and would be lost without them and though we've always been able to run complex searches across a library, being able to save those searches as Smart Collections at the library level makes this another welcome feature. As if to emphasise this point and highlight the usefulness of Smart Collections, every library you now create (or



update from previous versions) has a default set of Smart Collections, though you can easily delete them if you find they are not needed.

Effects now include some enhanced masking effects, including the new Draw Mask effect. This allows you to create your own custom mask effects (or garbage mattes) using linear, bezier or b-spline control points. Existing masks can be customised by clicking the Convert To Points option. Although masks can be keyframed over time, sadly there's no built-in tracking option available.

All other effects also benefit from the addition of masking features. Though these are limited to simple shape and colour masks, multiple masks can be applied and reordered on each effect to create more complex shapes.

The Color Board is now no longer an inherent part of every clip, instead it is now the Color Correction effect, which can be automatically applied by using the shortcut ⌘-6. The benefit of this is that you are now able to reorder the colour corrections you make with any other effect you also have applied, ensuring you're able to achieve exactly the result you want. If you're wondering where the balance colour and match colour commands are, they can still be found in the enhancements menu.

The video scopes have also benefitted in this update. Now you can display up to four scopes

simultaneously, change their layout and brightness. This means there's less toggling between different scopes when colour correcting.

All customised effects can now be saved as presets making them easy to apply multiple times. If required, these saved presets can be copied from one system to another, though it's not as straightforward as with other custom templates as these live in the user's Library/Application Support/ProApps/Effects Presets folder.

However, the headline feature in this update is the new 3D Text capability. If you are new to working with 3D text, there are some simple animated templates in the Titles browser that can be used to get you started, including a limited number of 'cinematic' templates. Though, as always with Final Cut Pro X, you've got far greater controls waiting for you just below the surface.

Any 2D text element can be instantly converted to 3D allowing you to choose from a wide range of incredibly detailed materials - such as stone, paper, plastic, wood, metal, and so on - that add texture to your text. Additional controls for lighting styles, shadows and general environment options allow you to truly refine your 3D text to perfection within Final Cut Pro.

Macworld's buying advice

There's plenty here to help keep the professional video editor at the top of their game. **Chris Roberts**

Free

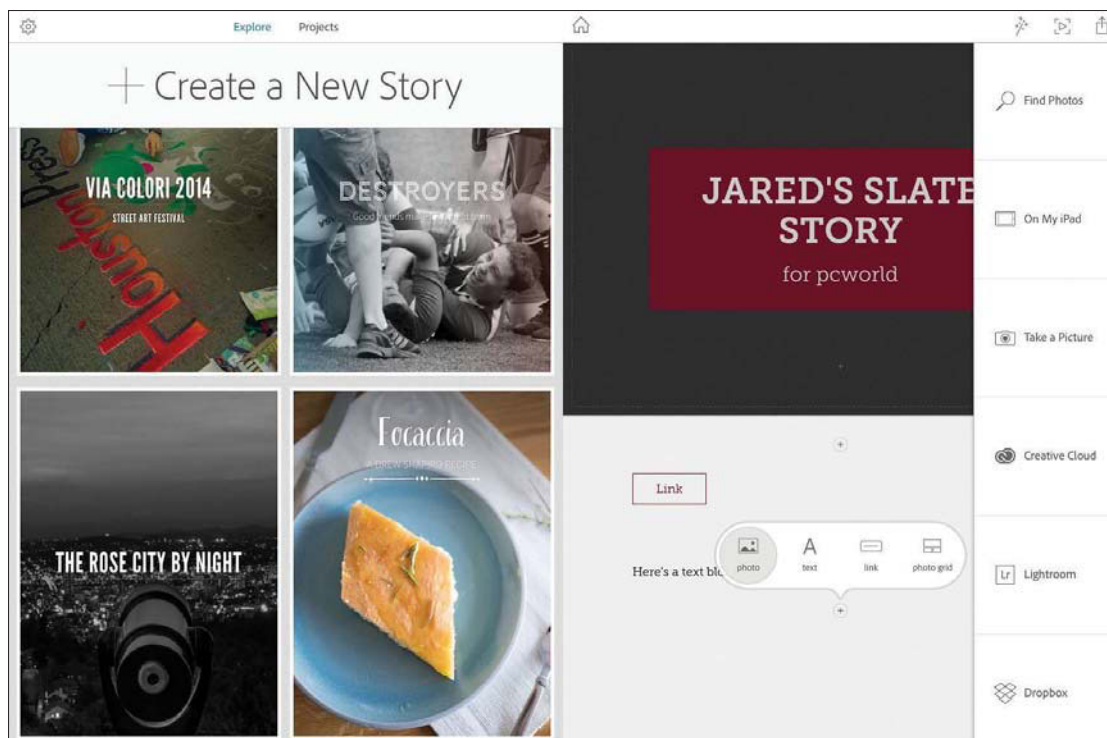
Contact

■ adobe.com/uk

Specifications

iOS 8 or later; 99.3MB

Adobe Slate



Adobe launched a new iPad app that aims to make anyone feel like a magazine editor.

It's called Adobe Slate, and it offers a way to mash up words and pictures into slick-looking stories for the web. Slate automates things like animations and transitions, and purposely limits control over fonts and formatting, so that anyone can make a good-looking story with no design know-how. The end-result is a web page, hosted by Adobe, that automatically formats itself to fit any screen size. Slate is available now as a free app for the iPad.

Why this matters: Adobe is following in the footsteps of other new-age presentation and storytelling apps such as Microsoft Sway, FlowVella and Haiku Deck, all of which try to automate the kinds of flourishes that once required serious PowerPoint or web programming chops. You give up control in the process, but the barriers to designing a polished web story are much lower.

To get started with Slate, you'll either need to create an Adobe account or sign in with Facebook. You can then look at some sample stories for inspiration, or dive into making your own.

You start by creating a title, which you can then fling around to one of nine positions on the screen – it appears as if you are dragging it wherever you want, but Slate actually guides it into preset slots based on where you direct it. You'll also pick a cover photo. Because Slate stories follow responsive design, you can set a focal point on your cover image to make sure that it crops properly on all devices.

Slide the title card upward, and a prompt appears underneath, telling you to add an image, some text, a link, or a grid of photos. Slide up on this, and you can add another story element below your first one, and another, and another, and so on. The idea is to create a vertical chain of photo or text blocks, and Slate will automatically make it pretty.

Images can be added from your Camera Roll, or imported from Creative Cloud, Lightroom, or Dropbox. Additionally, you could take a new photo from within the app, or search through Adobe's database of Creative Commons images.

It's dead-simple, but also limited. You can choose from a handful of themes to change the whole look of the story, but can't adjust individual fonts or formats, or even add a link within a larger block of text.

(You can, however, place links as standalone buttons.) You can change image formats so they appear full screen, inline, or as a scrolling 'window', but you can't add borders or freely move images around. Video isn't supported at all.

Even the publishing element is confining. Stories show up at slate.adobe.com, and you're given a direct link to your story to share with others. When exporting, you can tap buttons to share your story via Facebook, Twitter, email, or Messages, but you can only select one option at a time. You can, however, go back and republish your Slate story in as many different formats as you'd like. You're given an embed code, too, but only for your story's title and cover image – which directs viewers back to the story hosted on Adobe's website. You can't host your entire story on your own website or blog, or embed them within other web pages.

Macworld's buying advice

Slate has some potential as a publishing tool, especially considering how easy it is to get started. But without more control over how stories look and where they can be published, the appeal is going to be limited. **Jared Newman**

£286 inc VAT

Contact
■ filemaker.com/uk**Specifications**OS X Mavericks or later;
2GB of RAM

FileMaker Pro 14

Major improvements to FileMaker's infrastructure in its past two releases (versions 12 and 13) required a new file format (.fmp12) and sent a lot of developers back to school. FileMaker Pro 14 maintains the existing file format and solidifies some of these earlier advancements (especially in WebDirect) but also keeps the pressure on developers by introducing powerful innovations that affect the design of databases for FileMaker Pro, FileMaker Go, and web browsers.

Layout design

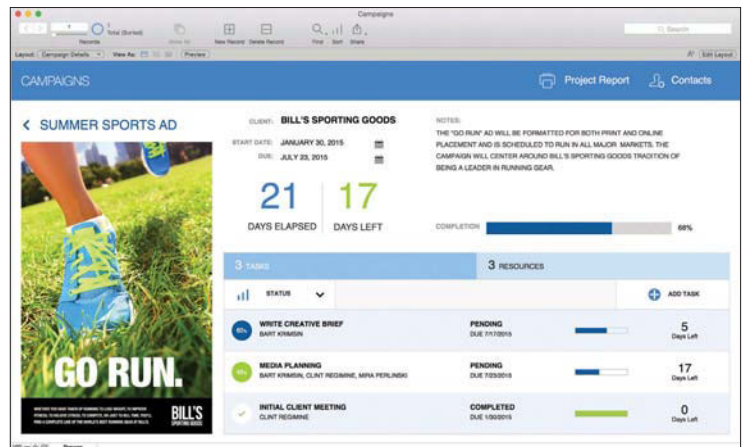
Since the news for solution developers applies equally to FileMaker Pro 14 and FileMaker Pro 14 Advanced, I refer to both when I say "FileMaker Pro". Whichever tool you use, it's easier than ever before to create consistent and attractive layouts for your users to work in, whatever platform they're on.

FileMaker Pro 14 introduces the first change in ages to the basic part structure of layouts: a new part for navigation elements. Navigation parts can be placed at the top and/or at the bottom of a layout, and at first glance, look like the old header and footer layout parts. But unlike headers and footers, navigation parts don't scroll out of view and they aren't affected when users zoom in or out.

The new navigation and control elements resemble the old header or footer layout parts, but it doesn't scroll out of sight in form view and it is always displayed at 100 percent. Here, the listing of records has been zoomed out considerably, but the navigation part stays full size.

FileMaker 14 innovates in another area: buttons. For starters, you can now format buttons to display text only, or text with an icon, or if you're the silent type, an icon without text. FileMaker Pro 14 provides a generous assortment of ready-made buttons for your use, but you can create your own if you like and add them to the assortment.

A more significant new feature is a new layout object called a button bar. It's always been possible to drop multiple buttons on a layout, then



copy and paste them on another layout. Invariably, however, you'd spend a lot of time fiddling with the placement of individual buttons. The new button bar object eliminates most of the busy work, because the buttons in a button bar are defined as a set from the get-go.

Equally, the button bar eliminates an old headache for developers and users alike. Developers of large solutions often want their buttons to have calculated or dynamic labels. There are many reasons why this matters, but one reason is that it makes it possible to change a button's label simply by modifying the calculated result; if you couldn't do that, you've have to edit each instance of the button on possibly scores of layouts, one button at a time. The old way to get dynamically labelled buttons involved defining fields in a utility table, placing the fields on layouts and turning them into de facto buttons by attaching actions to them. This works okay but has an undesirable side-effect: when users are shown a dialog that lists the fields on the current layout, the fields used as objects will be listed, too, even though they are not data fields at all. The presence of those user-interface elements in the dialogs inevitably confuses users. If you use button bars in FileMaker Pro 14, sort and export dialogs will display only data fields to users. This is a great example of how a rather technical new feature, put to use properly by a developer, ultimately makes life easier for end-users.

There are other improvements in the design tools, including some modest improvements to

the handling of custom styles, but I do want to mention the new placeholder label. This lets you display the field label right inside the field, which, at least in some circumstances, can make for much cleaner data-entry interfaces.

Scripting and calculations

For advanced developers, the most welcomed change in FileMaker Pro is likely to be the redesigned and renamed "script workplace" – in particular, the ability to enter scripts almost entirely from the keyboard. Those of you who don't spend hours every day scripting will be happy to know that you can continue to build scripts by pulling steps from the script step library. But developers who daydream in code will be delighted that they can now create a new script and simply start typing. You can add script parameters from the keyboard, too, and even edit calc formulas inline; and when the calc formula is a little too long to edit inline, you can switch to the more spacious old-fashioned calculation editor. This change doesn't make a whit of difference to end users, but FileMaker adepts are going to love it.

The script workplace lets you keep multiple scripts open for editing at the same time, which can be useful. It also now shows the listing of existing scripts and the list of script steps in panes on the left and right sides of the editing area that can be shown or hidden, as you like. If you have all the script steps in your head and can type well, you can just hide the script steps pane and forget about it. One quibble: I wish the list of existing scripts could



be made wider, because it's not wide enough to display long script names.

At about this point you're probably getting nervous that I'm going to blab on about the ability to run FileMaker Pro in 32- or 64-bit, how cool it is that we can use 'v' in checkboxes now as well as 'x', and excellent new functions like Get(Directory), but I shall forbear. There are too many improvements to talk about them all. FileMaker's website has a complete list of new features.

FileMaker Server

FileMaker Server provides the muscle of the FileMaker platform. But because it's on another computer in another room, sometimes in another city or state, most users don't think about Server until something goes wrong. Which it seldom does. So Server doesn't get much respect. But FileMaker Pro without FileMaker Server is like an iPhone without cell service.

There are a couple of new features. The main one is support for a standby server. The standby server mirrors the primary server in real time; if the primary server goes down, the standby server can be pressed into action immediately by the admin from the server machine's command line.

FileMaker Pro users will be grateful that FileMaker Server 14 now restores dropped connections in FileMaker Pro as effectively as it has been restoring dropped connections in FileMaker Go. FileMaker Server 14 also now help users and admins remember to give hosted databases strong passwords. In the past, all too often, forgetful users upload databases to the server without changing the default credentials.

And thanks to improvements in the WebDirect engine that is part of FileMaker Server, users accessing a FileMaker 14 database in web browsers should see a substantial increase in the speed with which data is returned and pages are rendered.

No Pro? No problem!

The typical way to access and use a FileMaker Pro database has always been to open it in a copy of FileMaker Pro. But with the release of FileMaker Go a couple versions back and of WebDirect in FileMaker

13, there are now two effective ways to get to your databases that don't involve using FileMaker Pro.

FileMaker Go, which runs on your iOS device, is now a robust and mature app, and the design improvements in FileMaker Pro 14 described earlier (navigation layout parts, button improvements) allow you to make really idiomatic iOS apps. Easier to get to than it used to be and with a light, clean look that harmonizes with iOS 8, the FileMaker Go 14 menu - under the FileMaker folder icon in Go - is now so useful I may rely on it for actions I used to make special buttons for.

The neatest improvements in FileMaker Go 14 have to do with container fields. Container fields in FileMaker are used to store files of just about any sort: photos, movies, pdfs. FileMaker Go 14 has a vastly improved data-entry interface for container fields. Just tap on an empty field and a button menu with your options appears. If you click Signature, a signature screen appears and you can sign right on your iPhone or iPad. Click Done and the signature is saved to the container field. If the field already has data in it, a different set of menu buttons will appear depending on the type of data in the field. For example, if the field contains a movie, you'll see controls for playing the video. And movies can now be played either inline or full-screen, as you like.

The other way to get to a FileMaker database without using FileMaker Pro is to open the database in your web browser. This I have been able to use and test extensively. Introduced in FileMaker 13 and improved in FileMaker 14, this capability draws on a technology called WebDirect built into FileMaker Server. When everything works as you hope, the database in your web browser looks almost indistinguishable from the database accessed in FileMaker Pro, and works almost exactly the same way.

I mentioned earlier the improved performance of databases accessed via WebDirect. WebDirect now serves databases up nicely to the latest tablet browsers; it even worked well in my iPhone 6, although there's no official support for mobile phone browsers at this time. WebDirect in FileMaker 14 also provides more

attractive and more efficient toolbars and menus inside your browser window.

FileMaker Go is a brilliant and inexpensive client for FileMaker databases. Its limitation is that it runs only on the iPhone and iPad. WebDirect makes it possible to access a database on a Mac as well as a tablet, but it has limitations, too. It's great for browsing and editing data but it can't print reports. There's always something to hope for in the next version.

Backwards compatibility

FileMaker Pro creates files with the same .fmp12 file format introduced a little over three years ago in FileMaker Pro 12. So if you have an office with multiple FileMaker Pro users, it's okay for some of them to be using FileMaker Pro 13 (or even 12) while you mix in a few new copies of FileMaker Pro 14.

But keep in mind that, if you start using FileMaker Pro 14 to create new databases and in those new databases you use features that are new in 14, those features won't be available to any users in your workgroup still using FileMaker 12 and 13 (Pro and Go). Sometimes this isn't a serious problem. For example, if you create buttons with icons and labels in FileMaker Pro 14, FileMaker 13 users will see buttons with labels but no icons, which shouldn't be a big problem. At other times, a new feature in FileMaker 14 will break the solution in an earlier version of FileMaker. Button bars simply disappear in FileMaker Pro 12 and 13, while navigation layout parts get displayed as an area of the screen with a big red 'X' through it. This is the price of progress.

I suggest that you don't start using button bars or navigation layout parts until you know your users will all have FileMaker 14. And if you really want to dive into the new layout features, it's a smart idea to write a startup script that checks to confirm that the user has FileMaker Pro 14.

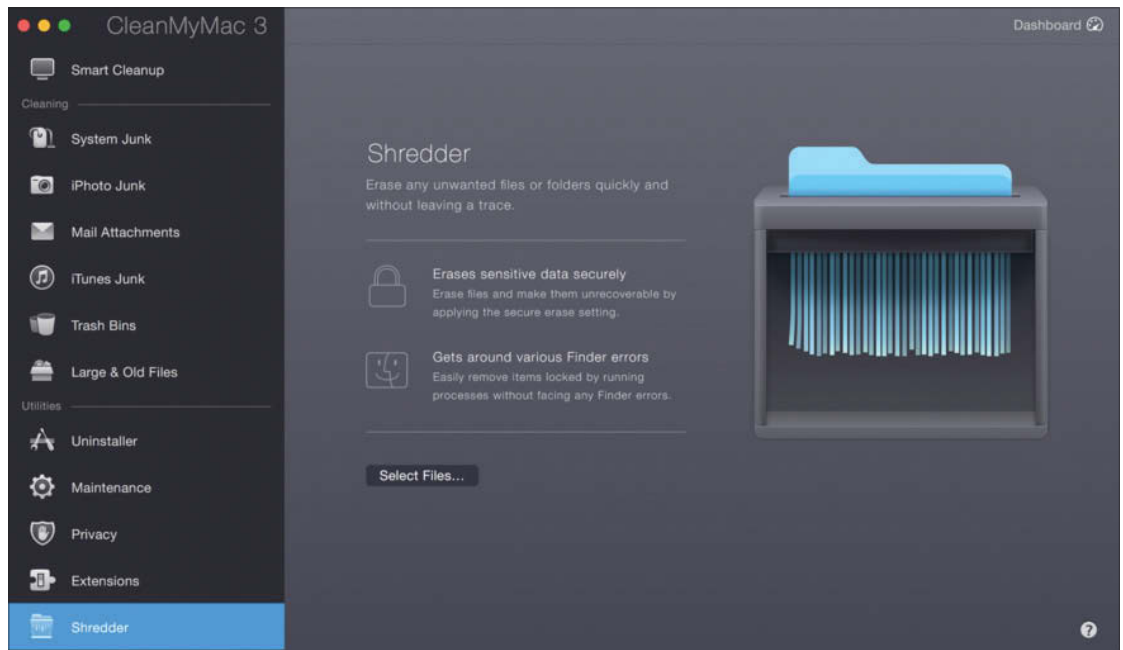
Macworld's buying advice

If you're new to the Mac database world, by all means, step right up to FileMaker 14 Pro. There's more power and potential in 14 than in any previous version, yet it's as user-friendly as ever. **William Porter**

£34.95 inc VAT

Contact
■ macpaw.com**Specifications**OS X 10.8 or later;
40MB disk space

CleanMyMac 3



CleanMyMac 3 is the new version of MacPaw's catch-all utility to scan your Mac and remove gigabytes of assorted rubbish and gunk that builds up over time.

Like previous versions, the software wraps itself around a series of tests and services. It works to remove generally unused, developer-oriented, extraneous, and backup files associated with your most commonly used applications that take up available disk space.

CleanMyMac 3's selection of available tests has grown to add tools such as an uninstaller, general maintenance, online privacy functions, and file shredder to its previous suite of tests. This is on top of the Smart Cleanup, System Junk, iPhoto Junk, Mail Attachments, iTunes Junk, Trash Bins, and Large & Old Files scans that comprise the cleaning utilities and work to make CleanMyMac 3 your intended catch-all Mac utility of choice.

All of these tests can be customised and configured as needed. Where a given test might tell you that you can save a certain number of gigabytes by deleting files, CleanMyMac 3 gives you fine control as to which files are deleted.

The program adds several new scans and tests, but the overall product still holds together; the new features don't feel bolted on

and the app doesn't feel overly bloated. The tests can be configured, there's a good range of preferences, and nice touches like extensive information about your Mac's hardware – including a health status for your hard drives, remaining battery life for a notebook and available RAM – show good attention to detail. Additional features such as a scheduler allow you to designate when you'll be reminded to run tests and the tests themselves work as advertised, the new uninstaller coming in handy with removing assorted programs.

CleanMyMac 3 comes in handy in a world filled with fast but still relatively small solid-state drives, where regaining a dozen or so gigabytes of space certainly isn't a bad thing. On my late 2013 model Mac Pro, with its minimal 256GB flash storage, CleanMyMac 3 was able to retrieve 18.1GB of storage space, and the computer ran without a hitch afterwards.

To its credit, MacPaw took the CleanMyMac 2's frenetic user interface and dialled it down, making it more helpful in this new version. Each test function now includes a brief explanation as to what the test does and what it repairs. This doesn't go into developer-level explanations, but it serves to tell you what you're about to do, what changes will be made, and gives

you sufficient information prior to clicking the Scan or Clean button.

This dovetails nicely with the program's access to preference files and settings that might be a little hard to find if you're a casual user. For example, the Privacy module allows easy access to cookies, saved passwords, and other preferences for your web browser of choice, saving you some digging around in preference and extension menus by putting these things in one location.

If there is one caveat, it's that CleanMyMac 3 attempted to launch itself during the interrupt screens that sometimes come up when running another application. This was easily worked around by configuring the preferences to ignore these interrupts, but it's also a behaviour I've never seen before.

Macworld's buying advice

CleanMyMac 3 faces tough, competition against other all-in-one/spring cleaning utilities for the Mac, and one could argue that its end results achieve what assorted freeware/shareware utilities could do at a price of £34.95 for new users and 50 percent off for upgrade users. Still, it's nice to be able to remove gigabytes of rubbish from your Mac; the program and its tests work well, it can be readily configured and could be worth your consideration. **Chris Barylick**



£29.99 inc VAT

Contact
flexibits.com

Specifications

OS X 10.10 or later; 11.8MB
disk space

Fantastical 2

As Apple's calendar app for iOS and Mac OS X moved across recent releases from inconsistent, inadequate, and irritating to more or less just fine, the market for replacements grew and matured. Fantastical, now in its second release, filled a gap. The program doesn't just present a clean list and offer strong support for different calendar systems, it also has excellent natural-language processing.

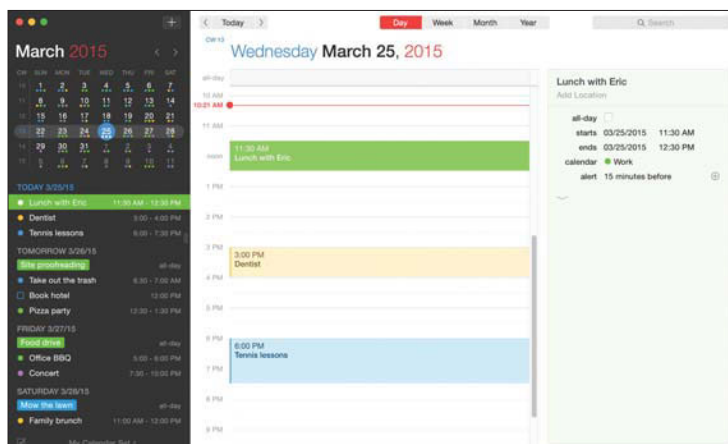
The guiding philosophy for Fantastical is that it's a calendar app that focuses on upcoming events in a list view, keeping that view active no matter whether you're looking at a graphical layout of day, week, month, or year.

The software can pick up existing accounts and calendars set in the Accounts system preferences pane, or stored locally or via Exchange, as well as let you manually add other iCloud, Google and Yahoo accounts, or any CalDAV-compatible calendar link.

Flexibits has always stressed its natural-language aspect. It works as well or better in OS X than in iOS. You can typically type a narrative sentence such as, 'Meet Karen at 10.15am at 101 Euston Road, London for two hours on Tuesday and set an alarm an hour before,' press Return, and you're done. The date is set by default to the current one selection; the address added to the location field; the end point figured out; and the alarm turned on.

The supported vocabulary is large, though it's easy to confuse it. For instance, entering, 'eat greens every night at 8pm' works just fine, but 'eat greens at 8pm nightly forever' does not. Flexibits says it will be responsive to feedback and expand the vocabulary based on user requests, and even did so during the beta-testing phase.

Reminders have more limited parameters. You can preface your to-do sentence with 'reminder' or 'remind me to' or the like. If in the process of creating a reminder or event, you can click a switch to flip to the other kind of entry. That's the one click you might find useful during item creation.



Fantastical rewards you by experimenting or becoming a more sophisticated user. While it appears at first glance that you have to choose a calendar from the pop-up entry rather than type it in, Flexibits hit the shortcut of using a slash followed by the unique part of a calendar name – such as 'Office/public' – and the appropriate one appears in the calendar field for the entry in progress.

An app that grew from an iOS sensibility definitely believes in minimizing the number of 'touches' with a mouse. This generally works to its advantage. In the year view, for instance, often a somewhat wasted view in other calendar programs that provides too much information and too little functionality, Fantastical uses shading to indicate the intensity of a day from yellow (least) to red (most). Hovering over a day for a moment reveals a floating summary; clicking a day scrolls the list at left to that day's activities.

Clicking an event in the list sidebar or in the Mini-Calendar list or double-clicking an event in the weekly or monthly view brings up an editable pop-over with the same options found when you initially create an event. This also appears when selecting an event in the day view, although in a separate right-hand pane.

In its drive to keep its approach clutter-free, options besides the basics are hidden, while creating or when editing an event or reminder. Tapping a down arrow reveals items, such as invitees, URL, and notes, as well as time zone, and repeat in the

default area if they haven't already been set for an event.

For frequent travellers, the app supports fixed and floating time zones for events: the former used for events occurring at a specific time (an appointment) and the latter that should happen at a given time of day (such as taking medication) regardless of zone. Enter a time zone in natural language or the word 'float' or 'floating' and Fantastical places it correctly.

Time zones are supported in reminders, but not floating times, and the time zone isn't shown for reminders, though it is set correctly. The current time zone is derived from the system, but can be overridden in the Advanced preferences. I've found time-zone controls maddening in Apple and other apps; Fantastical has the best controls to set and events, though it does lack a visual reminder in the list and datebook views that an appointment's time is non-local.

Fantastical uses Calendar Sets to manage which of your calendars appear. Rather than constantly display a list of all calendar, active or otherwise, the app offers a Calendars preference to build sets, which can be selected among in a pop-up menu at the bottom of the list view.

Macworld's buying advice

If you find Fantastical's event-list centric approach matches the way you want to manage your calendar, and the natural-language entry an appealing way to avoid adding events, it's the right program to pick. **Glenn Fleishman**

Both lenses
\$99.99 (£65)

plus \$5 (£3.30) shipping

Contact

■ momentlens.co



Moment Wide Lens and Tele Lens



The iPhone makes for a pretty good camera on its own, but adding an additional lens can really help your photos shine. Moment's (momentlens.co) Wide Lens and Tele Lens offer something a little different - unlike other iPhone camera lenses that sit on top of your phone, Moment's lenses attach to your iPhone's lens using a special plate. It's a thin, strong piece of metal that adheres to the back of your phone like a sticker and allows you to screw on different lenses similar to how you might with a DSLR. Perhaps that's why Moment had no trouble reaching its Kickstarter funding goal for this pair of lenses in 2014.

While the lenses do help you take better photos, its mounting solution leaves something to be desired.

Setting up

Installing the Moment lenses' adhesive plate doesn't take much time at all. This plate-based installation system offers a huge advantage for early adopters who always have the latest iPhone model - the lenses are interchangeable between devices, so instead of upgrading to buy new lenses, you just have to buy a new plate matched to your new iPhone. The downside, of course, is that you have to semi-permanently attach the mounting plate to your iPhone. If you decide down the line that you don't want to use the lenses anymore, you'll have to heat it up using a hair dryer in order to get it off your device - it won't just peel off. That means you have to be pretty committed to the lenses before you install the plate.

I have a silver iPhone 6, so the black plate really stands out - enough that, aesthetically speaking, I might be reluctant to walk around with my iPhone case-less while it's still on there. That said, the metal is thin enough for a case to fit right over it. If you are a case user, then the plate will blend right in.

I tried the Moment lenses with Apple's Leather Case for the iPhone 6, as well as with comparably sized cases by Hex, Reach 79, Sonix, and Speck. The Speck cases were the only ones I had issues with: the cutout in the case for the camera is a bit too deep, and I was unable to screw on the lenses with the case still on. You're likely to have a similar problem with other thicker cases, so first check out Moment's list of compatible cases (tinyurl.com/op3nz7q). Since you likely won't be using the lenses all the time - they're more of a 'special occasions' type of accessory - you could just take your case off before using them. Still, it's something to keep in mind.

The right moment

The 'special occasions' thing is key. Neither lens is huge by any definition, but they're both bulky enough that you're probably



The adhesive back plate pops a little too much for my liking against an iPhone 6.

not going to want to take them with you everywhere. Both come with a small pouch to keep them protected, but the pouch's thin material may not protect the lenses if the pouch is thrown around in a book bag or purse all day.

Attaching the lenses isn't exactly a quick process, either. When you see something you want to snap a shot of, you have to reach into your bag, pull out the pouch, take out the lens, and then line the lens up just right so that it locks into place. None of that is particularly hard on its own, but if you're trying to take a quick group shot or casually capture a shot of a seagull in your path, you might opt to skip it, since the lenses require so many steps.

The lenses are also large and heavy compared to the thin, light iPhone. You won't want to walk around town with one of these attached. There's no lens cap, so you can't just throw your iPhone into your pocket or bag and keep going – you'll have to take it off and put it back on, or else risk damaging it. When you think about all that, it might be easier to just bring along a standalone camera.

Putting the lenses to work

On the bright side, all that extra work eventually pays off. I took both lenses with me on a walking tour of San Francisco, and the photos I captured were outstanding.

The telephoto lens allowed me to capture a close-up photo of Alcatraz



from a dock where I could barely make it out with my bare eyes, and it brought me closer to the sea lions that had moved far away from the pier to sit in the afternoon sun. When using the telephoto lens along with the iPhone's built-in zoom, I was able to get close enough to read previously unreadable signs and get a good look at people who were once just small figures in the frame.

Zoomed all the way in, however, small movements I made while breathing and my slightly shaking hands were very apparent. To get a clear shot, I had to brace my iPhone on a fence or newspaper stand nearby. A small travel tripod could have helped out a lot; I'd definitely recommend using one to push the limits of the lens and your iPhone.

The wide-angle lens captured the entire crowd gathered to watch a Chinese New Year performance

and made it possible for me to take a picture of the entire Ferry Building while standing across the street. There's a bit of vignetting on the corners of the images, but nothing that couldn't be easily removed in a photo editor or with a little cropping.

Macworld's buying advice

The Moment lenses made obvious improvements to my photos, and I wouldn't hesitate to throw them in my bag anytime I was headed out for a similar casual afternoon. Likewise, the lenses could be a great solution for travellers, who want to take high-quality shots but don't want to lug a full-size camera along with them all day. The stick-on plate, however, means you need to be committed to using the lenses, something that might be a bit more of a hassle than it's worth for everyday use. **Emily Price**

Moments' telephoto lens (left) and wide-angle lens (right).



The lenses are great, but bulky – especially compared to an iPhone 6. You wouldn't want to leave these lenses on all the time.

Help Desk

Answering your questions about getting the most from your Mac and iOS device

iOS and Mac SOS

Solutions to your most vexing Mac and iOS problems

BY CHRISTOPHER BREEN

Making DVDs from old iMovies and slideshows

I still remember the glorious day when I first encountered writable CDs. It was in the early 1990s with a £70,000 system designed by Kodak to produce its Photo CDs, discs that worked with its CD/DVD player and with computer software to provide galleries and high-resolution scans. It took years before CD burners were included in inexpensive PCs (and, late to the party, Macs), and the CD media dropped in price.

Then the DVD format went through a similar, but much more rapid cycle, and then on to Blu-ray, the winner in the high-definition home video format years ago. But I haven't owned a computer that can burn DVDs for years. Once hard drives outstripped the capacity to back up to more than a handful of discs and drives also became cheap to use for backup, coupled with cloud storage and online sharing, it all seemed pointless.

I'm not alone in feeling this way, but two questions from readers sparked this walk down writable memory lane.

Old iMovie, new Mac

Q: I have 2006-era iMovie projects, but the latest version of iMovie won't import them. Is it still possible to obtain older versions to refresh the files as I want to produce DVDs I can pass on to my kids? There must be someone who has archived all the program versions for Macs over the years. Any ideas?

Karl Hess

A: I consulted friend, colleague, and frequent *Macworld* contributor Jeff Carlson, who wrote extensively in the past about iMovie. He says that while Apple used to offer iMovie HD 6 as a

free download for people who didn't want to shift to iMovie '08, that's no longer the case. (I'd avoid non-Apple sites that offer it free; you have no way to determine whether the disk image has been tampered with.) And the current iMovie (version 10) can't import iMovie HD 6 projects.

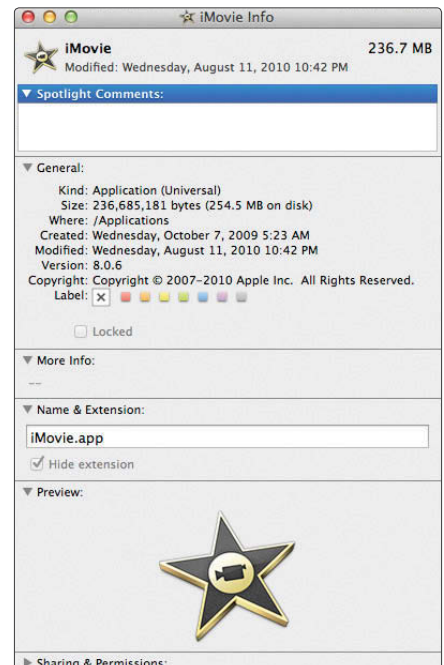
One strategy is to find someone who has an older, working Mac with iMovie '08 installed, import your project there, then copy it to your computer. iMovie HD also works on OS X up to Mavericks if you can get a copy to install. The latest iMovie (version 10) can import versions 7 (which Apple called iMovie '08), 8 ('09), and 9 ('11). There's a host of provisos from Apple (tinyurl.com/px79j7r) just about the limitations of importing into version 10, so it may require a fair amount of rework. (You can also find the version number by selecting iMovie in the Applications folder, choosing *File* → *Get Info*, and referring to the version number under the General section.)

Jeff says that although this might not be welcome advice, re-editing the original clips – which Karl should have because they're part of an iMovie project – might be the best strategy and involve the least work. (For an old project, right-click and you'll see Show Package Contents. Choose that, and all the clips that were imported are nested in folders.)

The other question, however, about producing DVDs – let's join that with another reader's query on putting photos on DVD.



With the demise of iDVD as supported software, she'll need to turn to a third-party solution; iDVD used to act as a conduit



You can find the version number of iMovie by using Get info (⌘+I).

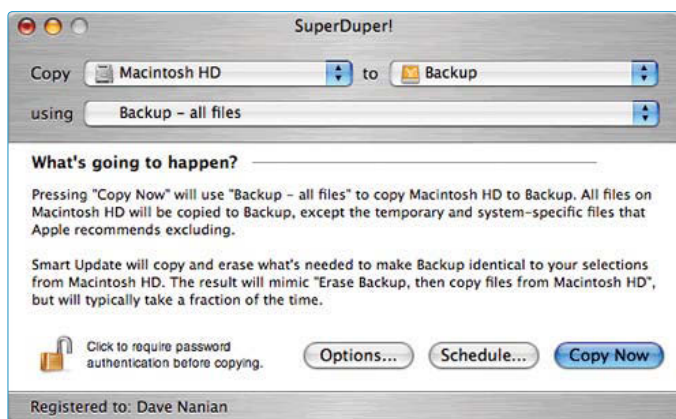
DVDs and times gone by

Q: I'd like to make a slide show of holiday snaps that I can transfer to DVD, which I've been able to do in the past. How do I do this without iDVD?

Lyn Cuneo

A: With the demise of iDVD as supported software, she'll need to turn to a third-party solution; iDVD used to act as a conduit. Likewise for Karl, and his movies.

My Help Desk predecessor, Chris Breen, pointed to a few options (tinyurl.com/qf2m33n) that are still valid,



Superduper! makes it easy to clone your drive no matter how many files you have.

4.3 billion files without each consuming unreasonable amounts of space.

To my recollection and experience, the number of files shouldn't contribute to any system slowdowns because they're inert unless needed. But during the cases that Doug mentions, could it cause delays? And why are there all these files being created, anyway?

I turned to an expert: Dave Nanian, the founder of Shirt Pocket (shirt-pocket.com), makers of the SuperDuper! app (shirt-pocket.com/superduper) that Doug uses. SuperDuper! is a disk backup utility that makes an exact, bootable clone of a drive. I have it scheduled to run every night on my main computer in addition to two other forms of incremental document backup.

Dave writes: "Ah, 1.3 million files. I remember those early days, back when laptops were made of plastic, and chips by IBM. But today, you're not alone. The laptop I'm typing on right now has – according to Disk Utility – 6,709,682 files. Make that, two seconds later, 6,709,687. In general, especially if you're not seeing excessive disk usage, this just isn't something to worry about. There are a lot of hidden folders on your drive, sometimes entire hierarchies that are emulating things that can't be directly expressed in HFS+, but are still counted as 'files', even though you wouldn't ever access them that way.

"Apple implemented Time Machine in a very peculiar way by most developers' reckoning to create an exact copy without duplicating every file. Using so-called hard links, which allows a single copy of data to appear multiple times in a folder hierarchy, Time Machine creates hidden folders that fully replicate a hard disk's file structure. A Time Machine backup comprises mostly hard links pointing to existing files or folders unchanged since the previous backup. Each hard link is counted by OS X as a separate file."

Doug Eldred

including getting an old copy of iLife that included iDVD and installing it under Mavericks. (I haven't tried running iDVD in Yosemite because I don't have it installed anywhere. Some reports indicate it won't work.)

For photos, you can use any version of iPhoto to export a slideshow as a movie. Select an album or event in iPhoto, then *File* → *Export* and click the Slideshow tab. For DVD, Standard Definition is all that's needed. Then with iDVD (if available), Toast 12 Titanium, or Burn (all mentioned in Chris's article), you can push that slideshow to a playable disc.

However, in 2015 while it's a reasonable choice to use a DVD to make something ephemeral you want to share with people who may or may not have broadband Internet access, it's no longer a good archival format. That is, sharing holiday photos so a relative can pop it into a DVD works, but if you expect the disc to be a family heirloom, not so much.

Jeff Carlson notes that DVDs have relatively low resolution relative to most video produced in the past several years, as well as compared to the resolution of cameras in the past decade. Blu-ray is much higher resolution, but the problem of media persists: Discs don't last forever, and the writable kind are highly variable in their long-term readability. Find a 10-year-old CD-R, and pop it in – does it still work? Maybe. But discs degrade even in perfect humidity and temperature control, and more rapidly in garages in attics.

So what to do? Backup drives (more than one) that you rotate and retire,

secure cloud storage, and distribute digital assets to people you want to have them. CDs, DVDs, and Blu-ray discs – they're not as good as paper books, much less spinning and flash media.

As many as grains of sand on the beach

Q: My Mac used to have less than a million files (according to various tools, including SuperDuper!), and now it's [up] to 1.3 million. Trust me, I haven't knowingly created 300K new file recently. Those zillions of stray files don't seem to consume much space, but tools like SuperDuper! and Disk Utility "verify disk" need to process each and every one of them in one way or another. What are they? Where are they?

A: Mac OS X (and, invisibly, iOS) has always had an inordinate quantity of files because of its Unix underpinnings. There is something about Unix that loves a multiplicity of tiny files rather than monolithic larger ones, hence these huge counts.

Back in the day, it used to matter, because each file consumed a minimum amount of hard disk space regardless of the actual amount of data in it, and no more than 65,536 files on the drive. With HFS+, however, a drive can have nearly

Discs degrade under the best of storage conditions, and the writable kind are highly variable in their long-term readability

Dave notes that Time Machine also stores a sort of local backup on the startup drive to improve its performance in copying to a local drive or a remote one over the network. Most other backup software makes an initial copy of a file and then a 'delta', or a kind of summary of differences, for every version stored thereafter.

And Spotlight contributes to the file count. For better indexing, Mac apps have reference files for each quantum of data, such as an email message, to match a result up with an item. On one machine, I have hundreds of thousands of metadata files associated with email messages. Combine Spotlight and Time Machine, and you can see where the file count comes from. I don't use Time Machine and have nearly 1.8 million files on my MacBook Air.

Dave has consoling words, though: "I wouldn't worry about it too much — let the system handle its files, and don't be too concerned about the count. As long as your drive isn't mysteriously filling up, you're good."

Selective Time Machine

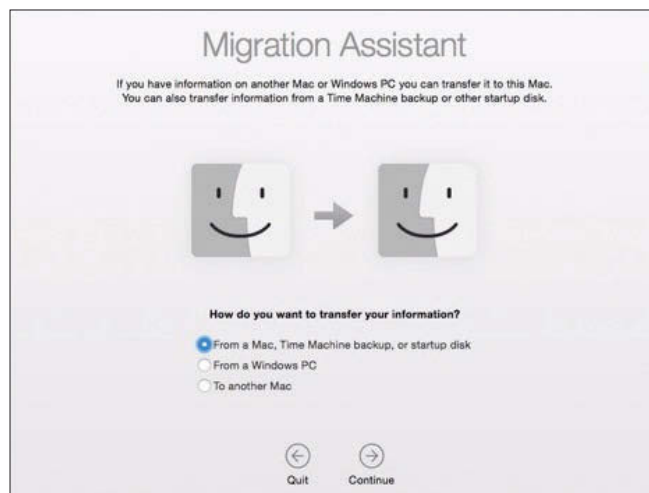
Q: When I reinstall Mac OS X (to solve performance problems, or clear space) I have a restore option to migrate data from my Time Capsule, but it currently only gives me options to migrate entire user profiles, applications, and settings. How may I pull only selected data (such as images, and iTunes media like music and movies, and documents) rather than an entire profile? I fear that restoring an entire profile may also restore any problems that made me want to reinstall OS X.

Larry Landen

A: It's a sensible and reasonable question. If some kind of corrupted or inaccurate setting is causing system problems, aren't you just asking for trouble by bringing all your settings

Migration assistant

lets you migrate some of your data.



over? Probably no. With the exception of specific applications having corrupted configuration files, a clean installation and a migration of settings generally seems to avoid causing identical problems in OS X. (Solving corrupt app settings varies, but often involves tossing a file or several from ~/Library/Preferences/ with the advice of the software's maker.)

That's in part because the corruption or other setting issues you're having can result from missing or overwritten system files or configurations that aren't copied back as part of a Time Machine migration.

With Migration Assistant, however, which you can launch on a computer after you've reinstalled and updated OS X, you can select certain sets of data (tinyurl.com/pcfp7vr) to re-import, and can omit all your settings.

Another option, is to use SuperDuper! or Carbon Copy Cloner (bombich.com) to back up a volume, or software-service combinations like Backblaze or Crashplan for specific files or folders. Then you can more easily pick and choose what to restore.

Where did you go?

Photos' different approach to displaying location information embedded in a photo or video's metadata has caused the most consternation, because Apple

has chosen an entirely different approach. Jason Snell addressed how to geotag photos without using Photos (tinyurl.com/k4m3tze). But *Macworld* readers are still trying to find out how to see locations on a map. Here's some more information on that.

Wayne Koabel's question was typical: "After [the] change to Photos from iPhoto, I can not find any places in my Source list. How do I access the Places map in the new program?"

Media retain geotagging, but that information isn't presented in a single map view. However, if you select *View → Metadata → Location*, a pushpin-in-a-square icon overlays the lower left of an image or video. (More on this Metadata item later.)

With the Info pane visible (*Windows → Info*), any image, video, or multiple selection that contains geotagging information will appear on a map at the bottom of the pane.

With nothing selected, the Info pane shows the coarse placement of all the photos in your library. You can zoom in to see fine detail about where images are clustered, but there's no way to select a moment from that map, which seems like an oversight.

When viewing moments, if there are one or more geotagged media items in the set, the label for that place or range of places appears as the moment name in bold. To the right of the moment's name, a broader place name appears in fainter type. Click that, and a full-window map shows all the moment's photos. You can

Discs degrade under the best of storage conditions, and the writable kind are highly variable in their long-term readability



show larger increments of time, up to years, and click the location. (You can opt to show in larger or smaller groups by checking or unchecking the Summarize Photos option in *Photos* → *Preferences* in the General pane.)

We're all assuming Apple will add the ability to geotag media in a future release, although it's hard to know philosophically if it'll return the Places view – perhaps as an album, the way it treats Faces.

Events, albums, metadata, and sorting

The switch to moments as a key organising metaphor has caught people off guard as well, and many are still trying to sort out how to adapt their previous method of working to Photos or restore what they had. If you aren't seeing a list of albums and other special items at the left of Photos, choose *View* → *Show Sidebar*.

John P. Fosdick asked: "In iPhoto, my events were in chronological order. In Photos, they're reversed. How do I arrange the events in chronological order again?" John Mordin noted with frustration, "I updated yesterday in the middle of a project that needed me to be able to sort according to photo name – which of course I could do with iPhoto yesterday but don't seem to be able to do today with Photos."

And Ray McEneaney discovered: "On converting to Photos for Mac, most of my captions have disappeared, and the ones that are left I can no longer put in alphabetical order. For example, I had my complete bird-list photos in taxonomic order."

For now, except in albums, Photos only organises images from oldest to newest. There are no other sort options by date, name, or other characteristics. In an album, you can drag photos into an arbitrary order, or choose *View* → *Keep Sorted by Date* to lock them in that same old-to-new view.

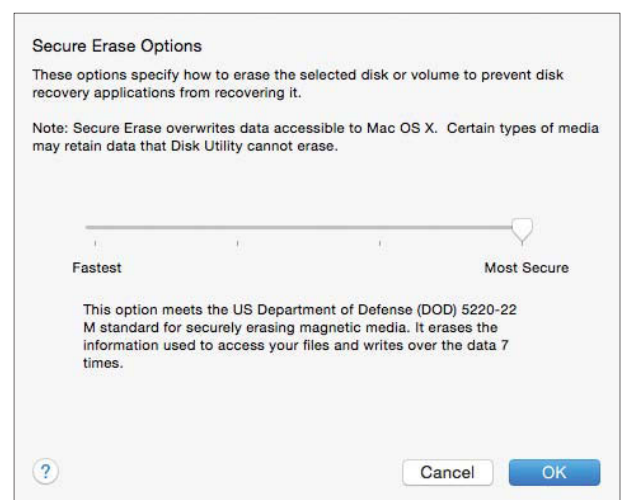
Several readers asked about converting iPhoto Events, which aren't supported in Photos, which has Moments

in lieu of Events. In the Albums list, you'll find iPhoto Events as a folder. Inside are all the Events from iPhoto. You can drag these into the main Albums view or create new folder hierarchies.

Luis Quinones found 800 albums created from Events in one of his imported iPhoto libraries, and wondered if they could be converted to Moments. Unfortunately, Photos automatically identifies Moments: there's no way to override and create them yourself.

Several readers preferred to merge multiple Events into a single one, and aren't sure what to. In Photos, automatically created Moments and user-created manual and smart albums are the only organisational tools. And

Securely erase your hard drive with Disk Utility.



albums can't be merged: you can reorder them in the sidebar under the Albums label, but you can't select multiple albums in the sidebar or drag one on top of another.

The default Photos view doesn't bring in metadata settings from iPhoto, and not everything is shown in the main view. The *View* → *Metadata* submenu has many options, but each of which works differently. (Location's utility is noted above.)

Title A title appears below the image if any is set. If not, it just leaves a space. Hovering over an image shows Untitled, which you can click to change. (And, as mentioned, you can't sort by name.)

Keywords A tag icon overlays the image, which, if carefully clicked, reveals associated keywords. However, the keywords can't be clicked. To search by keyword, you have to enter one in the Search field in Photos' upper-right corner.

Edited Edited images show a toolbox icon overlaying them in the lower right.

File Type For videos, slo-mo, and time-lapse clips, an appropriate icon is overlaid on the image.

Favourite This reveals whether you've marked an image as a favourite, and you can click while hovering over an image to give it some love.

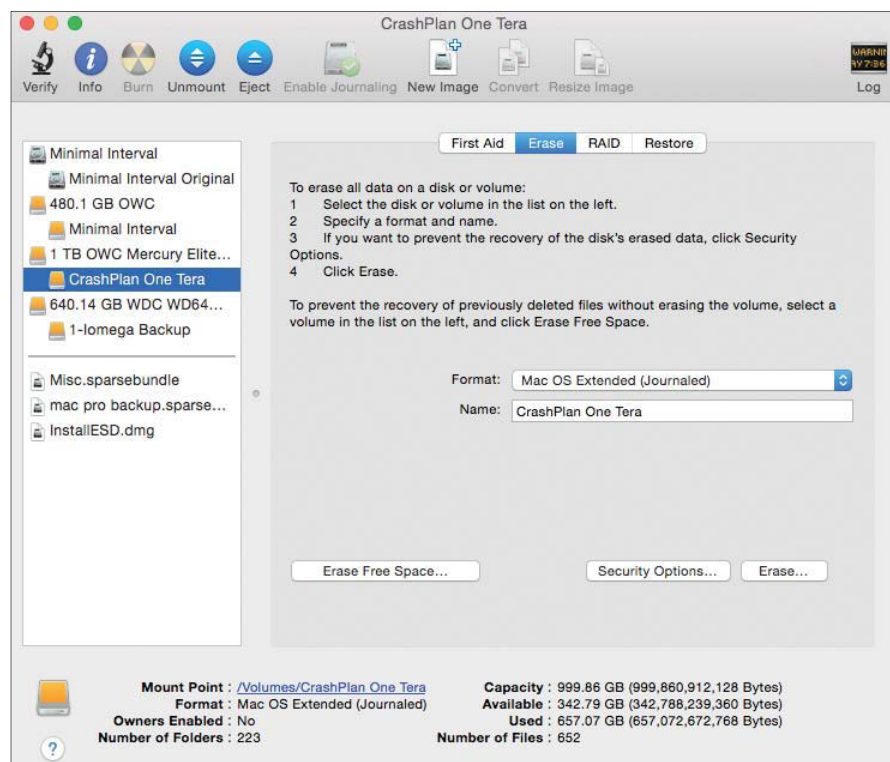
Referenced File Images that aren't stored in the Photos library but are elsewhere have a square-plus-arrow icon. Choose *Show Referenced Image* in the Finder by Control-clicking the image or, with the image selected, choose the item from the File menu.

A caption or description doesn't appear in any view, but it will appear in the Info pane when an image is selected.

Erase and leave no trace

Reader Jim Kay, who asked about migrating from one Mac to another, had a second question that opens a delightful can of worms: "Since I'm looking to resell my current Mac, how do I reinstall OS X so as to wipe my hard drive and resell it knowing the new buyer has a cleaned-up computer and that my files are nowhere to be found on it?"

Wiping or erasing a hard drive has a surprising number of definitions. In the



olden days, we ran utility software that often came from third parties, which would simply delete the catalogue and related records. Such an erase was, in practice, the best way to create a clean installation. But it doesn't make all the files on the disk unrecoverable – it just makes them harder to retrieve.

To get rid of old data in a thorough fashion, you need to use a multipass approach, in which every bit of storage in the disk is overwritten with new data (often zeroes). That's been built into Apple's Disk Utility for years. When you select a volume in Disk Utility and then the Erase tab, you can click Security Options to pick how many times the drive is overwritten: once, three times, or seven times. Once is considered enough for regular purposes, while three and seven correspond to different US government security guidelines.

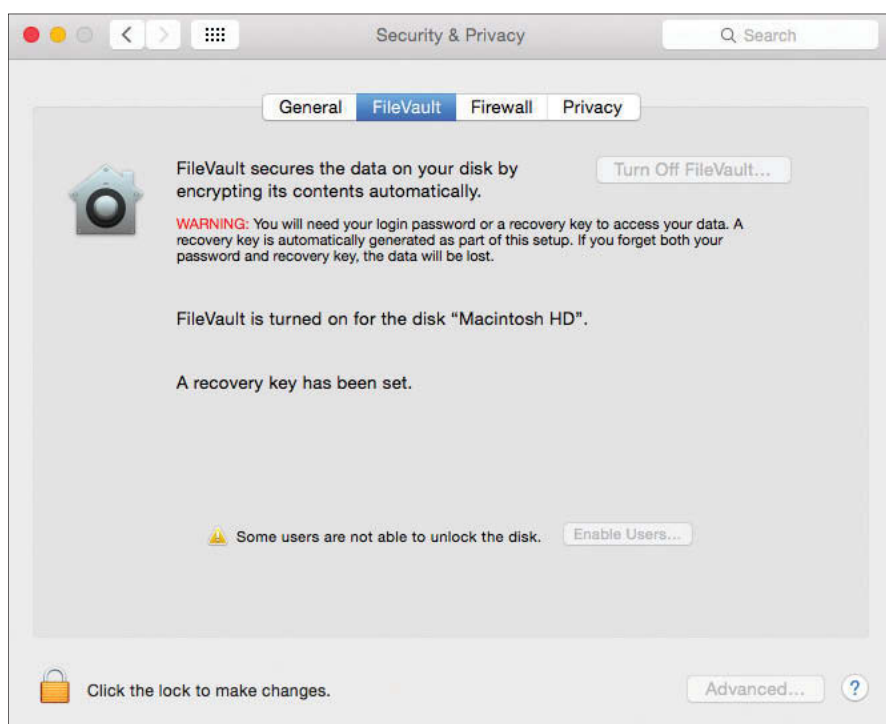
Before Lion, you had to boot from a CD or DVD system disk or a third-party utility, like Disk Warrior, or from an

You'll save a little time if you erase without overwriting, and then reinstall OS X, then Erase Free Space with an overwriting option.

external drive with OS X installed. Then you'd run Disk Utility to erase your startup drive. But this has become easier since OS X Recovery (tinyurl.com/mnedvnp) was added in Lion. Restart a Mac and hold down $\text{⌘}+\text{R}$ after the startup chime sounds, and the computer boots into the recovery mode. Select Disk Utility from the startup menu, and you can erase your startup drive securely.

There's a slightly different way to accomplish the same goal. First, erase a drive without the overwriting part, and reinstall OS X. After you boot, launch Disk Utility, select the startup volume, and click the Erase tab. Now use the Erase Free Space option, which also offers one, three and seven passes of erasure, and only empties out unused parts of the disk. The advantage is that your computer remains

To get rid of old data in a thorough fashion, you need to use a multipass approach, in which every bit of storage in the disk is overwritten



If you use FileVault, any data 'left behind' on your erased hard drive will be totally unreadable by your Mac's next owner.

available (though often slow) while this operation is underway.

Along with both Secure Erase and the Erase Free Space options, which can take a very, very long time even for a single pass, you've got two other options, one of which you don't need to enable.

Even better with SSD and FileVault 2

If your Mac has an Apple-installed or third-party SSD, you can't use Secure Erase, but you don't necessarily need it, as Apple explains in a support document (tinyurl.com/nnehsbk – see the note at the end). SSD data can't be trivially recovered because of how SSDs optimise storage to reduce wear and tear.

This is by no means foolproof, and one should assume there are forensic tools available that can reconstruct erased SSDs – some are for sale, but I haven't tested their claims. Apple doesn't provide in-depth details on why it made its statement about SSDs, as it does for some other security concerns, so I can't confirm what Apple says. However, there's a simple way with both SSD and

regular hard drives to perform a fantastically quick and reliable erasure: use FileVault 2.

FileVault 2 (tinyurl.com/qdhgs8a), the full-disk encryption (FDE) option that first appeared in OS X 10.7, keeps your startup drive encrypted at all times. Whenever you boot your Mac and log in to one of the accounts that's authorised to boot with FileVault 2, OS X encrypts everything written to disk and decrypts everything read on the fly.

With a FileVault-encrypted startup disk, you can restart into OS X Recovery and launch Disk Utility to erase the volume. However, before erasing, you need to select the disk and then choose **File → Unlock "volume name"**. Enter the password for any FileVault-enabled user account, and the disk unlocks and can be erased.

Erasing a FileVault-encrypted volume discards the key that's associated with it, turning a disk into a nearly perfect cacophony of irrecoverable randomness. Without the key, which is uncrackable in any realistic period of time by any current technology, the erased data is as good as gone, as if it had been written over millions of times.

You can then install OS X on that partition, either from the recovery

system or via an external drive (tinyurl.com/kpgd9fk).

A few other recovery and FileVault issues

Reader Peter wondered how FileVault figures in to cloning a disk. Because FileVault encrypts an entire drive and only decrypts files when you're logged in, it has no effect on how or whether you make a clone, use Migration Assistant, or copy files.

However, if you're planning on using FileVault on the new computer, I would heavily suggest enabling FileVault on the new machine before moving any files to it. This will speed up the operation by encrypting the new computer's fewer files first. When FileVault has finished and your new Mac has rebooted and you've logged in, then start the migration process, and all new files are encrypted on the fly.

Andrew Robertson writes that when he upgraded to Yosemite, his recovery drive remained out of date with 10.9 Mavericks. Then, when trying to set up FileVault and enable iCloud-based recovery of his key, he doesn't see an option to do so when booting into OS X Recovery. Fortunately, there are answers for both:

- You can reinstall 10.10 on the startup disk without damaging the rest of your setup, but make a backup first. This should upgrade the recovery partition. Carbon Copy Cloner (tinyurl.com/ozx63et) can clone a recovery partition from one drive to another, but it can't create one from an installer or from scratch.
- The Reset Password option isn't available with FileVault 2, but you can store a copy of your recovery key with Apple. To recover a key (tinyurl.com/pmhhvLp), first start up OS X normally, and enter the wrong password three times. (This is also how to use iCloud password recovery on non-FileVault systems.) You're then given the option to contact Apple, which requires speaking to a representative, and answering multiple questions exactly as you entered them when setting up the recovery option. If you answer these questions correctly, Apple gains access to the stored key, which it then provides to you.

WHICH WATCH?

How to pick the Apple Watch that's right for you

DO YOU LIKE THE ALUMINIUM LOOK? DO YOU WANT YOUR WATCH BAND TO MATCH YOUR WATCH CASE? DO YOU HAVE £8,000? THESE ARE JUST A FEW THINGS TO CONSIDER WHEN SELECTING YOUR FIRST APPLE WATCH

By Leah Yamshon

Picking an Apple Watch isn't like picking out your next iPhone – forget about focusing on specs and storage size.

Instead, you'll be looking at alloys (aluminium, stainless steel, or solid gold), style (sporty, classic or bling), and price (£299, £519, or the cost of iPad Air 2's for you and 19 friends). The Apple Watch is uncharted territory, but we're here to help you navigate. Here are some things to consider before you buy your Apple Watch.

The Watch itself

Under the hood, the Apple Watch hardware is exactly the same. The only differences between the three models are cosmetic ones, so if you opt for a £8,000 Edition, it will function just the same as a £299 Sport (more on price in a bit). The storage and battery life is the same across the board. You'll get 8GB of storage (Apple says you'll be limited to 2GB of music storage and 75MB for

photos within the Photos app) and up to 18 hours of battery life on a single charge.

A big criticism of smartwatches so far has been on size. The enormous faces of some of these watches look ridiculous on a smaller wrist. That's why Apple has two size options for the Apple Watch: 38- and 42mm. You can see what each of these look like on your own wrist within the Apple Store app on your iPhone – the app shows their actual sizes. Once you're on the Apple Watch landing page within the app, go to *Learn more* → *View pricing* → *Compare case sizes*.

Bands on the run

Most of the watch bands come with different size options, but don't pick your favourite band until you've measured your wrist: Some bands are limited to one case size, and others only cover a limited range. (I like the Leather Loop, but my wrist is 146mm around – and the Leather Loop isn't available for the 38mm case, which is my preferred size.) Apple has a



Okay, this isn't true to size, but if you launch the Apple Store app on your iPhone, you can toggle back and forth between 38mm and 42mm case sizes to get a real-life feel.



comprehensive sizing guide, so keep that in mind when picking your band and case. Here's a breakdown:

MODERN BUCKLE: The Modern Buckle is only available for the 38mm version, in three sizes:

Small: Fits wrists 135- to 150mm

Medium: Fits wrists 145- to 165mm

Large: Fits wrists 160- to 180mm

LEATHER LOOP: ...and sorry, ladies, the Leather Loop is only available for the 42mm version, in two sizes:

Medium: Fits wrists 150- to 185mm

Large: Fits wrists 180- to 210mm

MILANESE LOOP: The Milanese Loop is a one-size-fits-all situation:

38mm: Fits wrists 130- to 180mm

42mm: Fits wrists 150- to 200mm

LINK BRACELET: The Link Bracelet also only comes in one size per case:

38mm: Fits wrists 135- to 195mm

42mm: Fits wrists 140- to 205mm

CLASSIC BUCKLE: Again, the Classic Buckle only has one size for each case:

38mm: Fits wrists 125- to 200mm

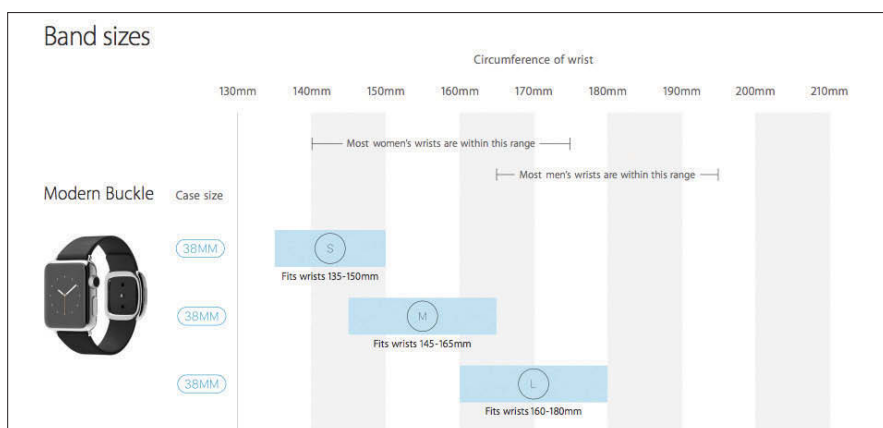
42mm: Fits wrists 145- to 215mm

SPORT BAND: The Sport Band comes in two sizes – small/medium, and medium/large – and you'll get both sizes if you order this band:

38mm: Small/medium fits wrists 130- to 180mm; medium/large fits wrists 150- to 200mm

42mm: Small/medium fits wrists 140- to 185mm; medium/large fits wrists 160- to 210mm

All the bands are interchangeable with each of the Watch models, as long as they're for the right case size. So, if you get the 42mm Watch case, you could pick any band designed for the 42mm version.



Apple's size guide gives you the measurements for each band size.



Although the bands are interchangeable, most bands have stainless steel features to match the stainless steel Watch.

The entry-level Watch ships with a Sport Band, but the stainless steel case really shines when paired with a leather (Classic Buckle, Modern Buckle, or Leather Loop, all with stainless steel finishes) or a stainless steel (Milanese Loop or Link Bracelet) band. Yes, you can pair the Apple Watch Sport case with a Milanese Loop band, but the aluminium will clash with the stainless steel, while the classic Watch was made for these bands. Plus, the Apple Watch also has a space gray stainless steel case option that's super svelte, with bands to match.

So if you have a somewhat flexible budget, and want a more polished look, go with the Apple Watch.

Limited Edition

We all want to be worthy of the Apple Watch Edition, but really, this one flat out comes down to price: Apple's crème-de-la-crème offering ranges from £8,000 to £13,500. It's gorgeous, and one of the priciest products the company has ever made. That kind of dough gets you either a yellow gold or rose gold case, and ships with a Sport Band, Modern Buckle, or Classic Buckle.

Though you could preorder the Edition online, this seems like something you'd want to try on first, if you can find a store that carries it: The Edition will be available in limited numbers, in select Apple and high-end retail stores. Even though it's available in both the 38- and 42mm case sizes, it looks like a piece of high-end jewellery – meaning it might not be everyone's cup of tea, style-wise.

So, if you have a sky-high budget, if your name is Beyoncé, or if you simply must have a gold watch to match your daily Oscar de la Renta, then the Edition is for you. Just remember that even though the battery will be replaceable, the Apple Watch is still a first-generation mobile gadget with a limited shelf life – it will likely be technologically outdated after a couple of years at most. Are you willing to take the plunge, or are you going to wait for the second round?

Be a good Sport

Cases and bands are all about size, but the models themselves are all about materials, style, and price. Which one should you pick?

For fitness fanatics – or for those of you who have to have an Apple Watch, but are on a tighter budget – your pick is a no-brainer: go with the Apple Watch Sport. Priced at £299 for the 38mm version and £339 for the 42mm version, the Sport has an aluminium case, features Apple's Ion-X glass display, and ships with the fluoroelastomer (say that three times fast) Sport Band. There's actually a lot to like about the Sport Band, too. It's comfortable, durable, and sweatproof, and it's available in black or white if neon colours aren't your thing.

The Sport is also a good choice if you're still not entirely sure about this whole Apple Watch business. Because it's more affordable, it makes a great starter device – for those of you who have first-generation device jitters. And if

you end up loving your Apple Watch Sport, you can upgrade its band later, though the metals won't precisely match.

The (classic?) Apple Watch

Apple's mid-range offering is simply called the Apple Watch, which is a little confusing, considering that Apple refers to its entire product line as the Apple Watch Collection. Name aside, the Watch offers a bit of both sides of the coin – it packs extra style that the base Apple Watch Sport lacks without breaking the bank like the Apple Watch Edition. Prices range between £479 and £949 depending on case size and band style.

The Watch costs £180 more than the Sport because of its stainless steel case (instead of aluminium), sapphire crystal covering the display, and black accent on the digital crown. Apple says that its signature stainless steel is 80 percent harder than normal stainless steel, and it certainly is sleek-looking.





10 KILLER TIPS TO GET YOUR APPLE WATCH SET UP JUST RIGHT

OUR TOP TIPS WILL ENSURE YOUR WATCH IS SET UP THE WAY YOU WANT

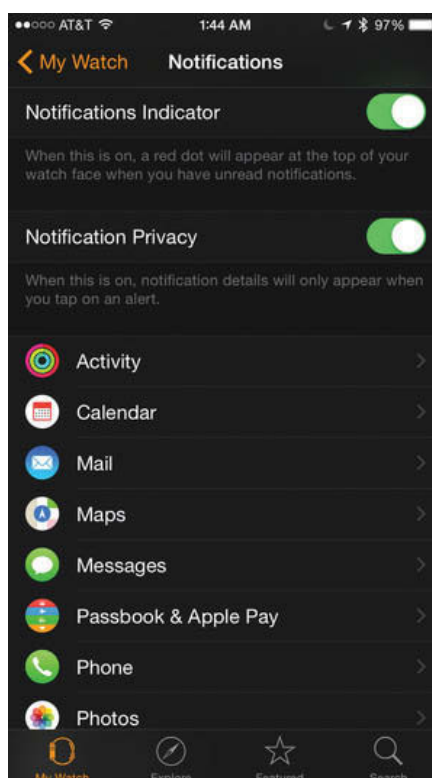
By Caitlin McGarry and Susie Ochs

Navigating the Apple Watch can be confusing at first, and it definitely takes a while to get your notifications dialed in so it's not bugging you too often, but you're still finding out what you need to know. These tips can help you adjust what the watch shows you and how, so you'll spend less time fiddling with settings and more time enjoying your new arm candy.

Take control of notifications

If you're one of those people who allows push notifications for every app on your iPhone, the Apple Watch will drive you insane. This is a gadget that requires very specific tailoring to ensure you're only getting the most important alerts. Otherwise your wrist will be barraged with taps. Get to know the Apple Watch app on your iPhone: it will make your watch the personalized device you want.

In *My Watch* → *Notifications*, you can pick and choose which apps you want to



Every app on your iPhone can send notifications to your watch. Trust us, you don't want that.

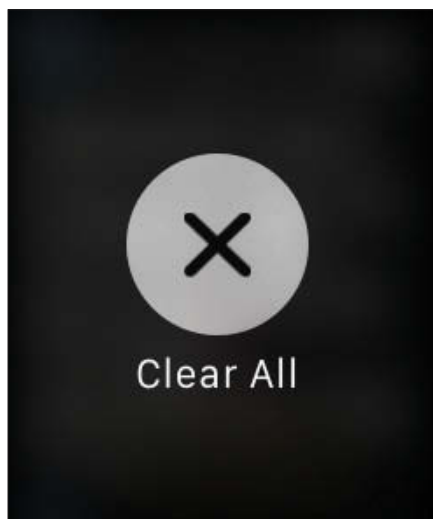
receive notifications from. Even non-watch apps that just live on your iPhone will send you watch notifications if you let them, and you shouldn't. Pick which apps make sense to see on the watch and mirror those – turn the rest off.

The watch's native apps such as Messages and Weather allow you to further customise the alerts you receive, so they don't have to exactly mirror your iPhone notification settings.

Note that if you want to make sure you receive notifications on the watch from specific apps, you need to change all of those apps' notification settings on your iPhone. This can be insanely time-consuming, but worth it. Otherwise, the watch will drive you nuts.

Force tap to clear all notifications

When you raise your arm to view your watch's face, you'll see a tiny red dot if you have new notifications. (It's on by default, but you can get rid of it in the Apple Watch app for iPhone, by going to *My Watch* → *Notifications*, and turning off Notifications Indicator.)



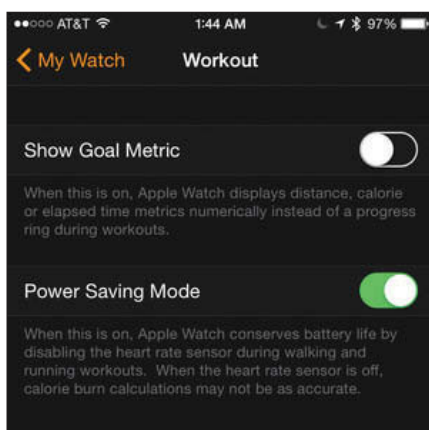
You get to your notifications screen by swiping down from the watch face. Once there, you can clear notifications one at a time by swiping it to the left and tapping the X, or just force-touch the screen for a larger X button that can clear all the notifications in one tap.

Don't give anything away

You'll be demonstrating your new Apple Watch to friends, family and random passersby – trust us, a lot of people are going to be interested in how it works. If you're worried about them inadvertently seeing previews of your email messages in the notifications list, just go to the Apple Watch app for iPhone, and turn on Notifications Privacy, in the Notifications menu. You'll still see notifications for email and messages, though you need to tap one to see what it says.

Conserve your battery

Your Apple Watch battery will last all day with regular use, but if you've drained it before the day is done, don't worry: you can still salvage the situation. Just swipe up from the watch face to see the battery percentage in glances, then tap Power Reserve to put your watch in conservation mode. This allows you to use the watch



as, well, a watch, though you won't be able to access any apps or do anything else with it.

One of the biggest drains on the battery is the Workout app, which uses the watch's heart rate sensor to accurately measure your workout intensity. A 30-minute workout can easily eat about 15 percent of your battery life, in my experience, so to prevent that happening, turn off the heart rate sensor in your iPhone Apple Watch app under *My Watch* → *Workout* → *Power Saving Mode*. Your calorie count probably won't be as accurate, but at least your watch will live to die another day.

Hand off tasks to iPhone

The watch is great for notifications, but if you need to dive deep into a task, the iPhone's larger screen real estate is more ideal. That's where Handoff comes in:

you can easily transfer from the watch to the iPhone in Mail, Maps, Messages, Phone, Reminders, Calendar, and Siri.

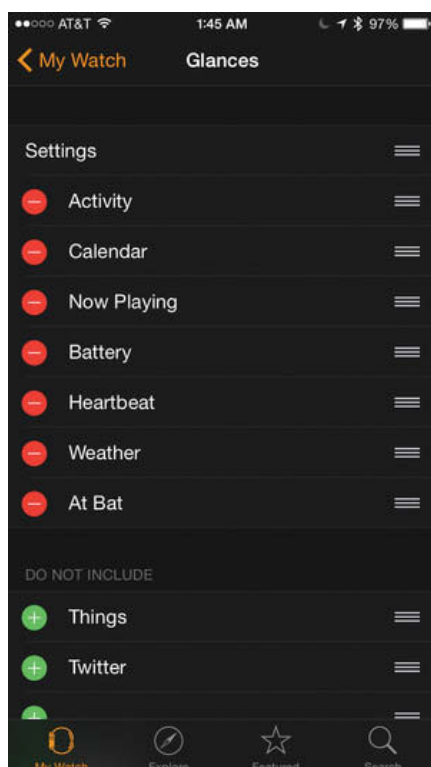
Wake your phone when you're ready to open the app and look for its icon in the left corner of your lock screen. Swipe up on the icon to open the app where you left off in the watch. (This won't work if your watch and phone aren't in Bluetooth range.) You can toggle Handoff on and off



in your iPhone's Apple Watch app under *My Watch* → *General* → *Enable Handoff*.

Change the order of glances

Swipe up on the watch face to view glances, which are quick nuggets of information, either the latest or the most important, from both native apps such as



Weather and Activity and third-party ones like the *The Economist* and Twitter.

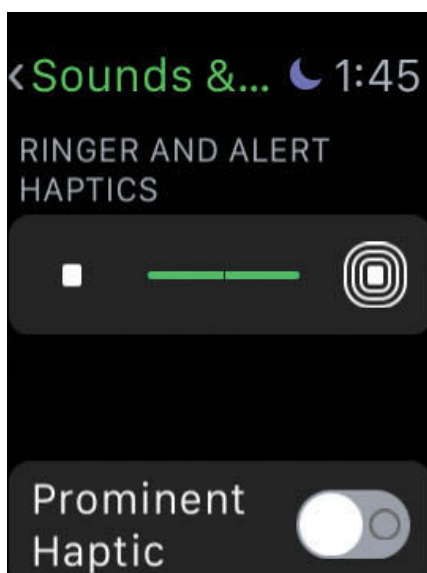
While plenty of apps have glance views, you quickly realise that you don't need immediate access to summaries from every single app on your watch. Remove apps you don't want to see in Glances from the Apple Watch app on your iPhone. Go to *My Watch* → *Glances*, then tap the red minus sign by the ones you don't want to see.

Then drag-and-drop apps in the order you want to see their glances on your wrist. I moved Weather and *The Economist* apps to the top of the list, because I typically look at glances in the morning when I'm getting ready for the day, but your mileage may vary.

Change the haptics

One of Apple Watch's coolest features is the Taptic Engine, which sends you haptic feedback, or a light tap on the top of your wrist, when you receive a notification. It's so much less annoying than a chime or a vibration. In fact, you can even turn off the watch's alert volume in the Apple Watch app's under *My Watch* → *Sounds & Haptics*.

You can change the intensity of the haptics in the watch's Settings app



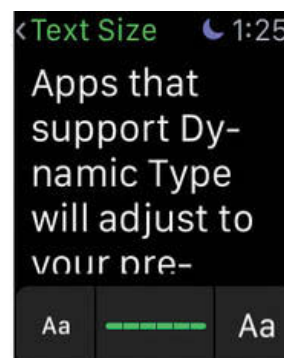
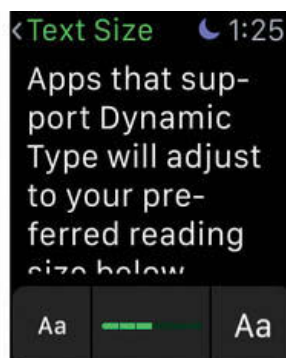
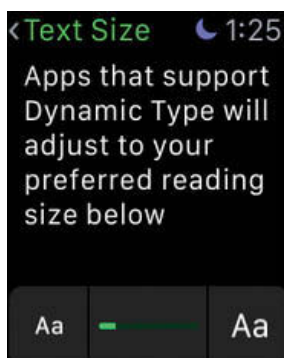
(which is one of the few things not buried in the Apple Watch app on your phone). Within Settings, use the Digital Crown to scroll down to Sounds & Haptics and use the sliders to adjust the their strength. You can also toggle on the Prominent Haptic setting to ramp up the intensity of alerts.

Be bolder

Open the Settings app on the watch itself, and choose Brightness & Text Size. Here you'll be able to pump up the size of text on the watch's screen by a couple of notches, as well as make it bolder. (Selecting bold text will restart your watch.) If you find yourself squinting at text on the Apple Watch's screen, this is exactly what you're looking for.

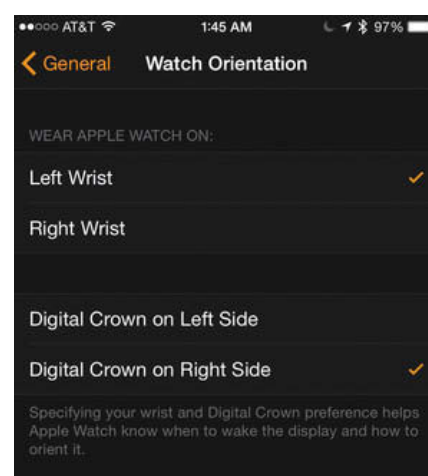
Go lefty

If you're left handed, your watch can be, too. Open the Apple Watch app on your iPhone, go to *My Watch* → *General*, and look for the Watch Orientation setting.



You can specify if you're wearing the Apple Watch on your left wrist or your right wrist, and on which side you like the Digital Crown. That way the watch's display will be right-side up, and all you have to do is reverse the watch band.

To remove your watch band, press the small button on the back of the watch near the top, next to where the band connects. With that button down, slide the band out of its slot on the watch. Then repeat for the other side of the band. Reverse its orientation and slide each end back into the slots until they click.



Quick scroll through lists

You can whip through lists of songs in the Music app, or contacts in the Phone app, by giving the Digital Crown a quick twist. When you turn the crown fast enough, you'll start scrolling by letters instead of by individual items. If you're looking for The Cure music, just quick-scroll to the T section of your Music app, pause, and then just tap The Cure in the list. Scrolling with the Digital Crown is a great tactile feeling that just might make you miss the clickwheel on your old iPod.



The best is yet to come

The future is bright for apps on the Apple Watch, with a multitude of innovative software on the way

As many reviewers have noted, the Apple Watch offers a surprising amount of depth for a first-generation device.

Besides telling time, it's very good at tracking all kinds of fitness statistics, and at motivating its wearer towards leading a more active lifestyle. It also works well with iOS's notification system, and its integration with Siri is top-notch.

Unfortunately, the richness of the Watch's built-in software is not matched by third-party apps, many of which seem to suffer from a distinct lack of purpose and functionality that are bound to make us wonder whether what we have now is all we'll ever get out of the Watch.

Given the anticipation that Apple built around its latest product, this is perhaps a little disappointing, but there are perfectly good reasons behind the status quo, and a definite possibility that things will improve very rapidly in the near future.

Less computer than you'd think

While undoubtedly a great feat of engineering, the Watch's design is not without its compromises. Apple obviously

had to strike a balance between the device's power and its size – after all, nobody would want to wear the world's most powerful computer if its battery were the size of a brick.

To minimise power consumption while still providing users with the kind of responsiveness and smooth animations that we have come to expect from an Apple device, the Watch simply offloads most of its computational work to its paired iPhone, using technologies that the company first introduced last year with the launch of iOS 8.

What we think of as a 'Watch app' is really a combination of three different components, each with a specific function. The first is called a 'host app'. This is your traditional iOS software, which runs on the iPhone and provides the kind of functionality that we have come to expect from our pocket devices.

Apple calls the second piece of the puzzle a "WatchKit Application," but this moniker is deceiving. The only part that actually resides on the Watch itself, this bundle of data contains user-interface elements, like buttons and images, that

are ultimately displayed on the screen strapped to your wrist, but does not include any code at all.

An extension behind the curtain

The magic happens in the final component of the trio, a collection of code called a WatchKit Extension that runs on the phone and uses Bluetooth to interact with the user interface stored on the watch.

The advantages of this arrangement are fairly obvious. First, the bulk of the battery-consuming operations – calculations, networking, and so forth – take place on the iPhone, a device whose power usage Apple has had years to perfect and optimize. Secondly, it makes near-instant Watch developers out of anyone who has experience writing iOS software, which offers some explanation for the remarkable 3000 apps available at launch. Plus, as an added bonus, the Watch and iPhone app can share code through the extension, leading to less duplication and fewer bugs.

On the flip side, the current state of affairs means that, from the point of view

of a developer, the Watch is essentially little more than a tiny external screen with touch capabilities. Most of its advanced sensors and functions, such as the microphone, accelerometers, and Digital Crown, are entirely out of reach, and even something as simple as displaying an animation requires pre-rendering every individual frame, uploading it to the Watch, and then playing it back.

More power than meets the eye

If you were waiting for some good news, here it is: Despite its size, the Watch itself packs a powerful punch, and is capable of much more than Apple is allowing developers to do right now.

I can think of a few good reasons for Apple to take such a conservative approach when it comes to third-party software. The first is that most developers had essentially no physical access to a Watch until after their apps had hit the App Store. If you're disappointed by the paltry amount of functionality offered by today's crop of software, imagine how



unhappy you'd be if you had to deal with apps that perform poorly or are unusable because they were developed blindly without access to real hardware.

Instead of giving developers a free hand, Apple decided to only open up a tightly defined set of functionality that third-party apps could safely take advantage of, knowing that the resulting code would work reasonably well once in the hands of customers. This avoided a potential disaster that could have cost developers time and money, and perhaps permanently tarnished the Watch's reputation in the minds of consumers.

It's also possible that Apple wanted to give itself some time to figure out exactly how users would interact with the Watch in the real world. I imagine that a downside of developing products in secret, like the folks from Cupertino are wont to do, is that it's sometimes hard to predict how they will be used once they are in the hands – or, as the case may be, on the wrists – of a large number of customers. Thus, better to err on the side of less functionality, and then iterate later once usage patterns become easier to understand.

Better may be just around the corner

At WWDC 2015, Apple made some announcements about what to expect from WatchOS 2.0, including new watch faces, a night-stand mode, improved Siri and Wallet. But there are hopes for more

Built-in apps can access to the Watch's sensor – a privilege that third parties do not yet enjoy.

developer features, such as the ability for third parties to gain direct access to the many sensors that are on the Watch, including its heart-rate monitor (and alleged pulse oximeter), accelerometers, and microphone. This would allow apps to offer more functionality, and perhaps give developers an opportunity to come up with new features that even Apple hasn't thought of yet. The ability to run code directly on the device could also open the door to more interactive apps by allowing developers to design richer user interfaces with more responsive elements.

Currently, this is made impossible by the fact that Bluetooth communications introduce a noticeable amount of lag between the time when the user taps the screen and the code running on the iPhone can react to the input, but perhaps Apple's engineers will be able to strike a middle ground in which some functionality can run directly on the device, while the bulk of the work still takes place on the phone.

Ultimately, the ball is now in Apple's court. Regardless of what new features the company has in store for developers, however, I think that it's safe to say that there is plenty of room for apps to grow and evolve, and to make the Watch an even better device than it already is.



Apple Watch gaming

Developers talk early titles and the challenges of wearable fun. Andrew Hayward reports

We've been bombarded by the images and ideas of the Apple Watch transforming the way we communicate and use apps in our daily lives, whether it's receiving notifications on our wrists, paying for coffee, or interacting with loved ones. So much emphasis has been put on the Apple Watch as an essential part of our everyday routine, yet for many of us, there's something we do all the time on our phones that has barely been shown in marketing materials: play games.

Yes, games. Of course there will be games for the Apple Watch, and from our conversations with creators, developers are excited about the opportunity to develop for a wearable device. "Entertainment apps are important in addition to utilitarian ones, reminding users that the device is fun as well as functional," says Mathieu Nouzareth, co-founder and CEO of FreshPlanet, which is bringing iOS puzzler BoxPop to Apple Watch.

Having a small screen strapped to players at all times offers new scenarios for portable gaming. But as with any new platform there are also challenges, which range from designing for a different kind of device to actually getting hands on the hardware to test out ideas.

First steps

Apple Watch owners already have a solid handful of games to choose from. Many of these are reconfigured versions of existing iPhone games, trimmed and tweaked to not only fit on a much smaller screen, but also to fit gameplay into more compact windows of time during the day.

It's little surprise that existing games will be the biggest initial focus for Apple Watch developers – after all, smartwatches with crisp, colour screens and ample processing power are still relatively new. While Google-powered Android Wear devices have been on the



market for around a year, games haven't flourished. To many developers, the Apple Watch will be their first foray into wearable gaming – and without the Watch on the market, it's surely tricky to dream up original ideas without that innate sense of how the device fits into (and affects) daily life.

One of the familiar games available on 24 April was Trivia Crack, which lets you choose answers to pop culture queries with ease. Another was Hatchi, which brought the Tamagotchi-inspired virtual pet simulator to your wrist. (For more games see page 76.)

Rules! is one game that's received some marketing love from Apple in the run-up to the Watch release. Not only did it pop up at the big event in March, but it was also the first iOS game to be updated with Watch support, and Apple recently offered free downloads via the Apple Store app. The charming iOS game – which tests your memory with increasingly complex sorting demands – now includes a "daily brain workout mini-game" for Apple Watch, says the Apple Store listing.



However, while those games might have started as iPhone experiences, original games designed solely for the Apple Watch are also coming at or around the launch date. Eyes Wide Games announced Watch This Homerun, a bite-sized baseball game that'll eventually be followed by other sports titles from the same team. Robot 5 Studios has already beaten it to the punch on one sport thanks to Football Twos, plus the team is working on Blackjack Mini and puzzler Berry Quest.

Runeblade seems like the most ambitious of the already-revealed originals – and that's a relative descriptor, of course. Created by Everywear Games, which was established early this year to exclusively develop wearable experiences, it's a fantasy role-playing game that you can play for five- to 15 seconds per stretch. That's right: an adventure meant to be played for seconds at a time, not minutes or hours.

New paradigms

In any case, whether creating a game from scratch or optimising and reworking

an existing one to fit a new device and style of play, making Apple Watch games before the device is actually available has proven to be a challenging endeavour.

With Runeblade, Everywear attempted to make the gameplay interactions feel “Twitter-sized,” explains CEO Aki Järvillehto. “Right now, this is one of the most exciting game design challenges out there. Finding the right balance between simplicity, complexity, and depth has taken a lot of iterations and testing,” he admits.

The Finnish studio was founded by industry veterans from big developers like Rovio and Remedy, but the Apple Watch isn’t like a smartphone or console. “The most important challenge for us has been to completely change the mindset of how we typically play games,” Järvillehto adds.

“When you’re aiming to create a fun experience on such a new platform like Apple Watch, it is critical to understand how people will actually be using these devices. The game has to fit in with people’s daily lives, and playing it needs to feel effortless.”

With Rules!, the team at TheCodingMonkeys ultimately settled on having the daily challenge span a smaller grid on the Apple Watch. “It’s kind of surprising how much complexity you can fit into a 2x2 playing field, so scaling that down from 4x4 [on iPhone] was a winning solution,” says CEO Martin Pittenauer. “Of course, most of the development was trying out ideas and looking at what works and what doesn’t. Game development for Apple Watch is still the undiscovered country, after all.”

The wearable nature of the Apple Watch brings some very specific considerations with game design. As Järvillehto’s social media comparison hints, it’s unlikely that players will want to have their wrists raised for long periods of time – so short play sessions are essential. Pittenauer also suggests that an ideal Watch game should let players stop at any moment and pick back up later, which might not work for many genres in their traditional forms.

And the tiny screen means that there’s no room for in-game excess or interface

design. Games must be boiled down to their essential elements, no more and no less. For Letterpad, that meant axing extraneous interactions and focusing on the word-building gameplay. “You don’t want to be navigating menus on the watch, unless that is the main functionality of your app,” says David Marsh, co-founder and chief pixellation officer at NimbleBit. “The goal was for the Watch to basically be a mirror of the game state on the phone, so that you could solve just a word or two when inspiration strikes.”

It’s also the reason why the initial games are largely graphic-lite affairs, most of which seem to require only simple taps for interactions and don’t require a ton of focus or concentration. No doubt, some enterprising souls will work out ways to bring high-impact experiences like racing games and first-person shooters to the Apple Watch, if only to prove the case. But it seems like the most ideal games will indeed be simple in design, flexible in demands, and bite-sized in nature.

Ready for launch

Some developers have had access to the Apple Watch to test out their ideas and see their games up and running on the devices, but not everyone. That’s been one of the biggest challenges for early Watch app creators, which is surely part of the reason why we haven’t seen a huge flood of launch games announced.

Hatchi had already been released on the Pebble, but Portable Pixels was concerned about making a fully-fledged game for a device they’d never played with. “We were cautious about trying to do anything particularly ambitious without ever having used the Apple Watch, and not having one to test with,” says owner and developer Greg Plumbly, noting that they plan to add more features once they have hardware. Creating for a software simulator only goes so far, though. After all, before the Watch’s launch, developers couldn’t tell how fast communication between the iPhone and Apple Watch would be.

Monkube encountered its own struggles with developing its Watch

game, BlastBall Duo. The game is adapted from BlastBall Max on iPhone – itself a conversion of a board game – and the studio has had to rely on Internet research to pick up design cues. “It’s not easy, I can tell you that,” says CEO and creative director, Sven Van de Perre. “We had to check online videos and analyse Apple presentations to get a feel for the way Apple does menus, user interface movement speed, and so on.”

As such, Monkube decided to skip the launch date and take extra time to make sure the game was working right on the Watch itself before shipping. However, since Belgium didn’t get the Watch on 24 April, Van de Perre had to tap into some international assistance to make that happen. “Luckily, my parents live in France and I could preorder three watches through them,” he admits.

But even with the myriad headaches and frustrations that come with making a game for a brand new platform, the developers we spoke with seem excited for the chance to launch an early Apple Watch game. For FreshPlanet, the task of designing for a small screen was a puzzle akin to those seen in BoxPop, and it provided a welcome shift from the norm. “We like to think of this challenge as an asset: restrictions force us to think in new patterns, making way for innovation,” explains Nouzareth.

“This April marked the beginning of smartwatch gaming, and we’re very enthusiastic about being on board right out of the gate,” asserts Järvillehto. “It has been tremendously fun to develop Runeblade. There’s this feeling of excitement among the team that’s a little hard to convey. That sensation that we are doing something new and fresh, that we’re doing the work of early pioneers and creating something completely new, constantly pushes us forward.”

Finally seeing months of potentially uncertain work pay off in a matter of days will surely be a great reward for some – at least for team behind Rules! “The project kept going and grew into something we really love and are passionate about,” asserts Pittenauer. “By now, we can’t wait to see the game running on our wrists.”



Apple Watch games

David Price rounds up 10 games on the Apple Watch that will keep you glued to its screen

The Apple Watch doesn't seem obviously suited to gaming, thanks to its small screen and necessarily one-handed control method. But with Apple's enormous user base buying the watch in large numbers, the stage is set for games developers to swoop in and make a killing.

Games developers will need to work with the limitations of the hardware and come up with something innovative and fun, but there are plenty of companies with the experience and skills to do this. After all, many of the best games on the iPhone are ones that embrace its compact, bite-sized nature and touchscreen controls: it's hard to imagine Super Hexagon and Ridiculous Fishing being made in a world of consoles.

Rules!

Price: £2.29

Apple's description: "Get your daily brain workout with this twitch-puzzle game

even when you're on the go. Each mind exercise is hosted by cute animated characters who lead you through 10 different stages towards a daily goal. You can get detailed statistics on your progress or quickly scan your summaries."

Why we're interested: The look of the game is gorgeous: tastefully artistic, while remaining colourful and, yes, cute. Despite the against-the-clock element, this feels like it could be a restful mind-stretcher rather than a stressful brain-buster, and the bite-sized micro-puzzle format is perfect for a watch.

Best Fiends

Price: Free

Apple's description: "It's time for an adventure as Best Fiends comes to Apple Watch. Set out to explore the lands of Minutia, collect treasure and overcome devious obstacles. Bring your rewards back into Best Fiends on your iPhone and use them to level-up your characters,

discover new powers and, of course, defeat the Slugs."

Why we're interested: A free-to-play, IAP-dependent puzzler in the style of Candy Crush, Best Fiends isn't the sort of iPhone game we pay-snobbs tend to go for, but they're crowd-pleasers. Looks-wise this is again appealing, and we like the idea of progress on one format carrying across to the other. But key to its success will be the interface: what aspects of the game have been transferred to the watch? Match-three puzzles tend to rely on 'just one more go' compulsion, but are users really going to carry on playing on a tiny screen?

Peak

Price: Free

Apple's description: "Peak time brings the Peak brain training experience to the Watch. Assess your attention and visual memory in 30 second chunks, anywhere, anytime. Play three games

on the go and reinforce the healthy daily habit of brain training.”

Why we're interested: Peak's slot on the Apple Watch apps page really doesn't do justice to the colourful graphics of its iPhone edition, nor to the satisfying depth of its performance analysis; maybe these elements will be firmly pruned for the wearable version. Peak is an award-winner on iOS and it sounds like the makers get what's important about developing for the Apple Watch: distilling the essence of a great but appropriate iPhone app into an experience that works on a miniature screen and in shrunken usage sessions.

Watch This Homerun

Price: £TBC

Sports are one thing, but team sports games aren't an obvious fit for micro-screen wearables. We've all experienced the difficulties of passing to an offscreen teammate in Pro Evolution Soccer, even on a living-room flatscreen, there's generally a lot going on at once, and matches take a long time to complete.

Eyes Wide Games tackles this challenge by focusing on a small and match-critical part of a (typically three-hour-long) game of baseball. As the firm's CEO puts it: “We're distilling the complete baseball experience down to its greatest hits in a form players can enjoy in just 10- to 15 seconds on the go.”

You're the batter, the match is at stake, and you have to tap at the let point to knock it out of the park. Could work, and the graphics have a neat cartoonish vividness. Wouldn't it be great if you could actually swing at an imaginary pitch and have the Apple Watch detect the movement, though? Just think of the silliness you'd witness on the bus.

Snappy Word

Price: Free

The word puzzle broken down into its subatomic component parts, Snappy Word couldn't be much simpler: you get four letters and then happily tap them to make words. You have to make as many words as possible (hopefully non-rude, despite the four-letter setup) in 30 seconds.

The minimalist aesthetic is great, and this feels like the puzzle game that Jony Ive would design. Except that Snappy Word is free, and will contain ads. Ugh, ads on a wearable – welcome to the future. Maybe there will be a paid-for, ad-free version as well. We hope so.

Runeblade

Price: Free

Developer's description: “Runeblade is a unique game experience tailored for Apple Watch. Designed for glance-based gameplay it delivers ‘twitter-sized entertainment’. Runeblade will be free to download on Apple Watch in April, and will be updated frequently after launch with new levels, enemies and features.”

Why we're interested: Because it's a proper RPG, or something approaching it. And there was a time when we thought proper RPGs couldn't work on iPhone. If Everywear has pulled this off, it could be a watershed moment for smartwatch gaming. (That's a big ‘if’, of course.)

Watch Quest! Heroes of Time

Price: Free

You wait ages for a micro-screen RPG to come along, and then two arrive at once. Watch Quest adopts a neat approach whereby inventory management is performed on iPhone and exploration, combat and puzzle solving happens on the watch. We like the sound of that. And the free-to-play model, which sells you new quests as DLC instead of nickel-and-diming you on continues and skips past annoying delays, is appealing, too.

Zombies, Run!

Price: £2.99

Developer's description: “Zombies, Run! is an ultra-immersive running game and audio adventure. You tie your shoes, put on your headphones, take your first steps outside. You've barely covered 100 yards when you hear them. They must be close. You can hear every guttural breath, every rattling groan – they're everywhere. Zombies. There's only one thing you can do: Run!”

Why we're interested: This is a great game for iPhone, neatly straddling the dividing line between fitness and gaming

apps, and its fitness slant makes it a perfect fit for Apple Watch. The makers have confirmed that they will be making the transition to Apple Watch.

Letterpad

Price: Free

Developer's description: “Apple Watch support in Letterpad will allow people to chip away at a puzzle right from their wrist whenever they have a free moment, without ever having to touch their phone. Players will also receive notifications on their watches when a friend has created a new puzzle and even get the chance to be the first to solve it from their watch.”

Why we're interested: The makers of Letterpad have a fine pedigree (Nimblebit is the studio responsible for Nimble Quest and Tiny Tower, among other games) and we like the simplicity of this design. It also seizes on the immediacy of smartwatch use – the very second you think of the solution to a puzzle, you can tap it out on your wrist.

Spy_Watch

Price: £1.49

We'll end with this promising sell from the studio that brought you the entertainingly bad-taste dexterity challenge Surgeon Simulator. It's all based on real-time notifications. The idea is that your agent, off somewhere having dangerous spy-themed adventures in the field, periodically calls in for guidance, and these calls are relayed to you in the form of notifications. You need to respond to the options available on your Apple Watch and tell him or her what to do; but the killer part is that if you (the real-life you, not the in-game spymaster) haven't got time to deal with it right now – at the orthodontist, your brother's wedding or your daughter's ballet recital – then the agent will be forced to choose for themselves, with (one imagines) perilous consequences.

We like games that force themselves into your non-gaming life like a virus, as long as they're not trying to grab your cash while doing so. And since we're told this will be a paid-for/premium game, that shouldn't happen in this case. An interesting, and potentially fun, concept.

Apple Watch security

Apple should improve Apple Watch's security, but the fear of theft is overblown

A small tsunami of stories appeared online recently about the ease of resetting the Apple Watch. Even if the Watch is set to require a passcode to unlock when it's removed from your wrist, Apple provides clear instructions on how to erase it, bypassing the passcode completely. Unlike an iPhone, which has Activation Lock to prevent it from being wiped without the original owner's iCloud password, there's no way to prevent a stolen Apple Watch from being erased and resold.

Some outlets and individuals had a moderate response, but others were outraged. Surely this makes the Watch eminently desirable by thieves, who, knowing that it's possible to resell with ease, will be targeting and preferentially snatching them off wrists.

Hardly, although Apple does need to step up its security game. Out of the gate, the company is making it simpler for people to avoid locking themselves out of their Watch. As the product's software inevitably matures and there are more Watches in the wild, the whole issues will shift. For now: keep it secret, keep it safe.

Hands off

People who already wear watches are already subject to irrevocable theft: no

built-in tracking devices or lock-out procedures exist for nearly any of them. And they're much more sellable: a Rolex has a value that varies around the globe, but people are willing to buy and sell them nearly everywhere.

It would also be highly suspicious if anyone is selling an Apple Watch. While prices online at Craigslist and elsewhere are above retail, there are still just a trickle being resold. This should make buyers wary, and police are already known to watch online classifieds to track trends in fenced merchandise.

Apple introduced Activation Lock in iOS 7 in combination with Find My iPhone, requiring an iCloud login to setup a phone on which the feature was active. However, unless a mugger has targeted someone with an iPhone, they might get an Android or Windows Phone. Only some of those phones can remain locked even after being erased by a thief or through a remote bricking.

I'm not arguing against the utility and the requirement that the Apple Watch be harder to wipe and sell. Rather, that the immediate risk exposure is low. Theft-deterrent and theft-recovery options don't keep your hardware from being stolen, but they do help prevent your personal data from being misused. The Apple Watch already has that feature.

Silent alarm activated!

Activation Lock and other Find My iPhone features, and similar options from other smartphone and app makers, put the fear of, uh, goodness and authority in the hearts of criminals. That has some effect, clearly. Theft-recovery help, such as displaying a reward message on a device or pulling up its point on a map or its track across space, may lead to its recovery.

But cost aside (even offset by any potential insurance recovery), your

personal data may be more valuable and losing it having a greater and more irritating short-term and long-term effect. So long as you have the Watch's passcode option enabled in the Apple Watch app for iPhone, whenever it's removed from your wrist, it locks. A stolen Apple Watch can be wiped, but your own data can't be accessed without the passcode. If you're still concerned, you can disable the "Unlock with iPhone" option in the Passcode settings in the Apple Watch app for iPhone.

It's bewildered me as a business model that the makers of mobile equipment, Apple and others, haven't relied more on the built-in serial number in devices, given that they typically immutably burned in and already easily available in places like My Support Profile. Why? There has to be some sort of revenue advantage or liability issue, but it's still baffling.

The Apple Watch, with less connectivity, is going to have to have to rely more on its serial number and its paired iPhone.

Apple has minor updates to the Watch OS coming, almost certainly in a matter of less than a month, given how its OS upgrade cycles work. Then there will likely be a major update later in the year when developers are given greater access to make apps that run directly on the Watch. Theft-related issues certainly can't be ignored as more Watches hit the market, and some negative news articles are sure to follow the first thefts.

Just as you shouldn't pull out a phone, tablet or laptop in a situation where you're vulnerable, you should take the same precautions with your Watch — as you would with any wristwatch worth more than a pittance. Also, don't take the shortcut home through Crime Alley. Didn't the name already make that clear?



TIME TO GO DIGITAL



Don't miss a single copy of **Macworld** by subscribing digitally

Subscribe from as little as **£1.99**

Macworld



New & noteworthy

Lewis Painter presents the best new iPad, iPhone and Mac accessories

Logitech Harmony Smart Control Hub >>

£89

logitech.com/en-gb

The Harmony Smart Control Hub allows you to control your entire home cinema system, using an app on your iPhone. Logitech claims that it's compatible with over 225,000 home theatre devices, so it should be compatible with almost any setup. The hub produces both IR signals and Bluetooth signals, allowing the Harmony to control entertainment systems, including the Apple TV, PlayStation 3 and Xbox 360.

According to Logitech, the hub can be set up with eight different devices at any one time, and the app utilises gesture control for ease of use. Gestures include swiping or tapping to adjust the volume, change the channel, fast forward, rewind, pause, play and skip.



Fugoo Festival Speaker >

£149

fugoo.com

The Fugoo Festival Speaker may be the perfect festival companion – it should last around 40 hours on a single charge. The Bluetooth speaker comprises of two tweeters, two woofers and two passive radiators, and should provide the desired 'kick'. According to Fugoo, it's water-, mud-, drop- and shockproof, and comes with one of three interchangeable jackets (Style, Sport and Tough). It also offers speakerphone functionality and works with both Apple's Siri and Android's Google Talk.

Oloclip Active Lens for iPhone 6 and 6 Plus >

£89

oloclclip.com

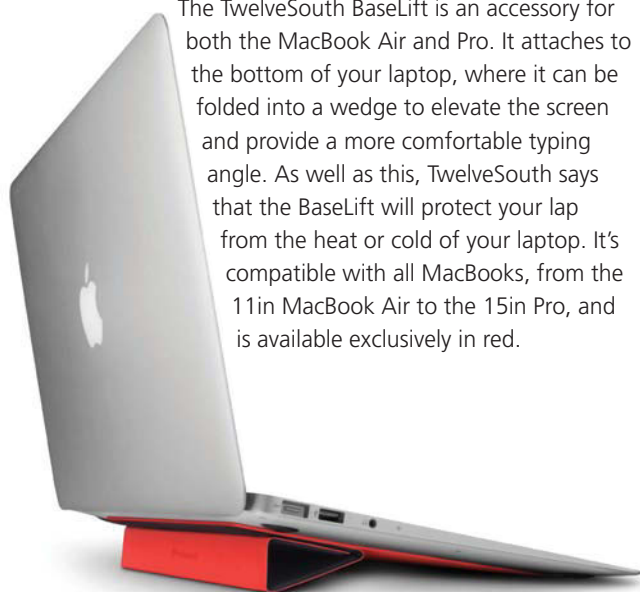
Oloclip's Active Lens for the iPhone 6 and 6 Plus will help take your iPhone-ography to the next level. Boasting ultra-wide and telephoto lenses, the housing slips over your camera. Oloclip claims that the ultra-wide lens will allow you to fit more into your photos, making it perfect for everything from group selfies to photos of the sunset. The telephoto lens gives you 2x optical zoom, which should bring you closer to the subject without having to use a quality-destroying digital zoom.



BaseLift for MacBook ▼

£38

twelvesouth.com



The TwelveSouth BaseLift is an accessory for both the MacBook Air and Pro. It attaches to the bottom of your laptop, where it can be folded into a wedge to elevate the screen and provide a more comfortable typing angle. As well as this, TwelveSouth says that the BaseLift will protect your lap from the heat or cold of your laptop. It's compatible with all MacBooks, from the 11in MacBook Air to the 15in Pro, and is available exclusively in red.

Sengled Pulse ▼

£149

hellonomad.com



The Pulse by Sengled is a set of two smart bulbs, but not the kind that you already know. It combines dimmable LED lights with JBL Bluetooth speakers – both elements are controlled via an iOS app. The bulb is designed to work with standard light sockets and can be

wirelessly paired with up to seven other Pulses to create a smart speaker system without wires and cables. The light doesn't change colour though, a point that's worth noting when you're spending £149 on a pair of bulbs.

CATWALK

The best-looking cases for your iPhone and iPad

WoodBack by Cover-Up

£12.95

cover-up.com



Barbour International

iPhone 6 case

£19.95

proporta.co.uk

Ted Baker Women's SS15
Collection (Crosshatch finish)

£24.95

proporta.co.uk



Time-saving tips for Office for iPad

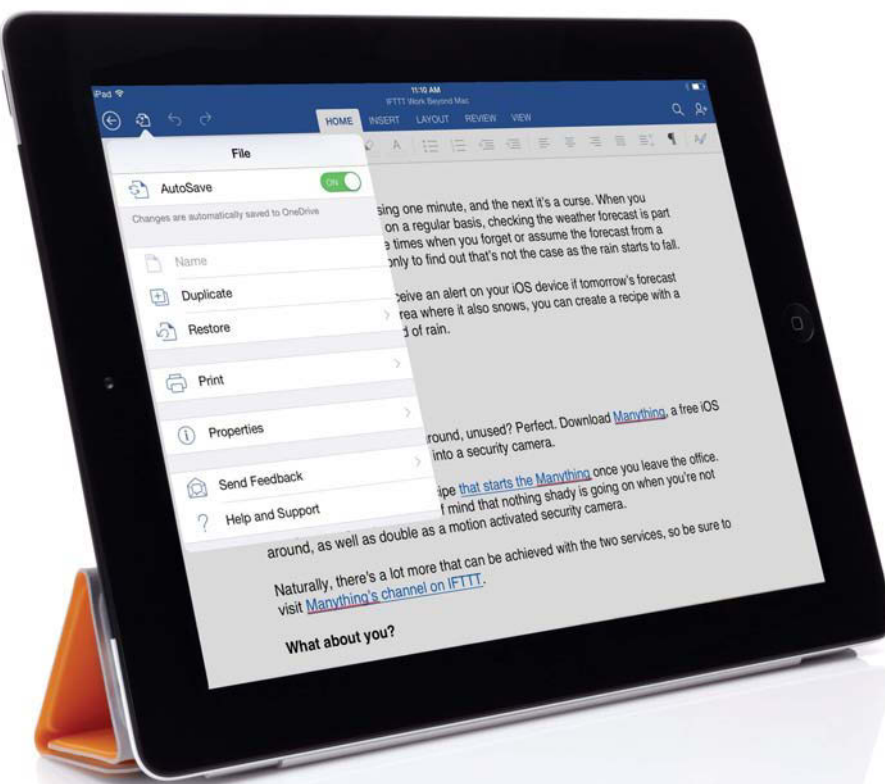
Jason Cipriani's seven tricks will help you get more from Microsoft Office on your iPad

Not too long ago using Microsoft's Office apps on any iOS device was nothing more than a far-fetched dream. Then the team in Redmond rocked the iOS world by releasing its Office suite for the iPad. There was a glaring issue with it, however, in the fact you could only view documents for free. To edit existing documents or create new ones, you needed to shell out for an Office 365 account.

Then in November, Microsoft surprised everyone once again by releasing an update that made editing documents part of the free set of features. Since then, I've spent plenty of time kicking the tires of the suite on my iPad and iPhone and learned some helpful tips for boosting your mobile productivity.

Add your Dropbox account

Dropbox and file sharing go hand-in-hand. Naturally, you'll want to access your Dropbox files within Word, Excel, or PowerPoint. There are two easy methods for connecting Office to Dropbox. Either tap your profile picture, then Add a Service; or tap the Open tab on the left



side of the screen, then Add a Place. Select Dropbox from the list in either place, and grant permission for the app to access your files.

It's important to note that you'll need to do this with each Office app you plan on using with Dropbox.

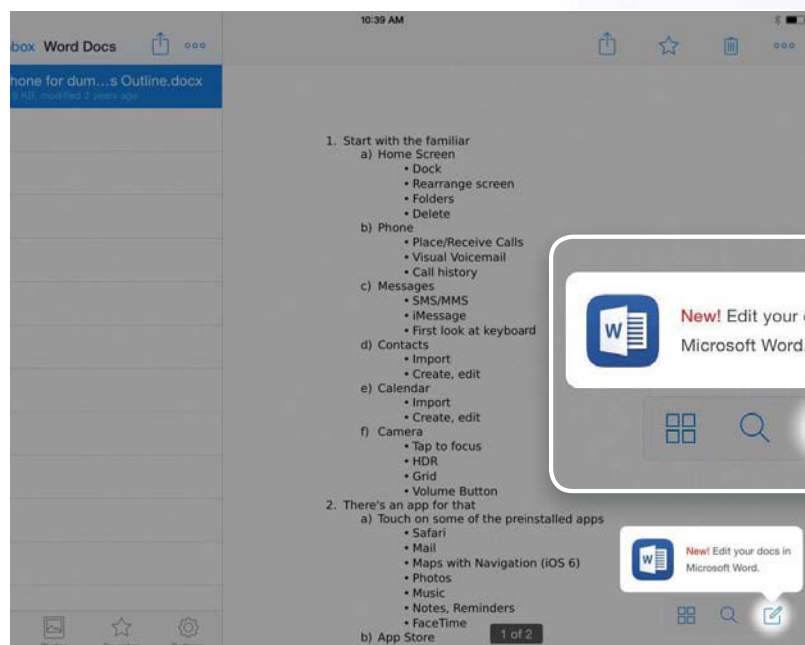
Open from Dropbox, edit in Office

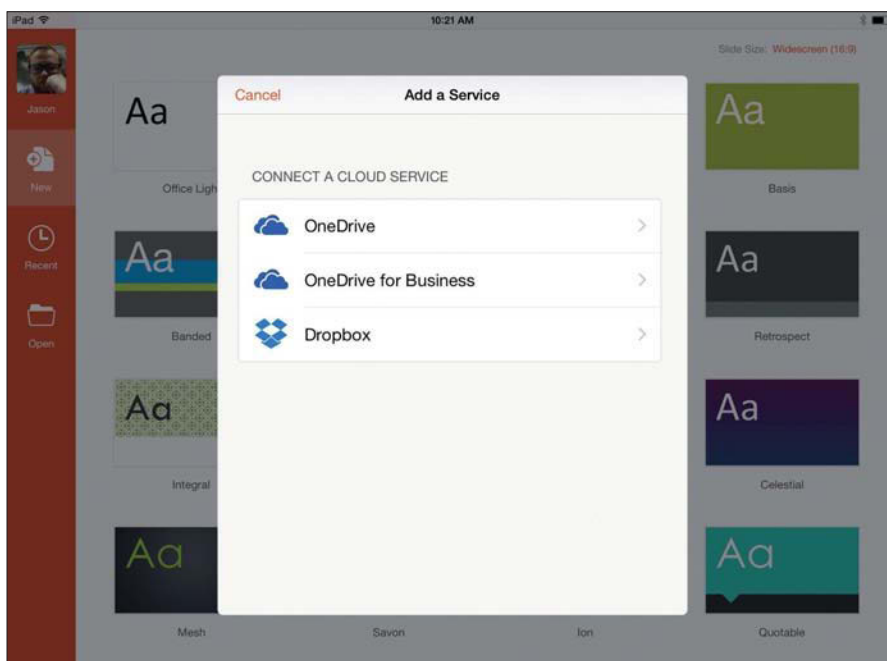
You can even start from the Dropbox app: While browsing your files there, you can send them to the Office apps for editing. Just open an Office-compatible document for viewing, and then tap the Edit button in the lower-right corner. The document opens in its proper app, and you can make changes and then save it right back to your Dropbox account.

Keyboard shortcuts

One thing I love about using an external iPad keyboard is taking advantage of the same keyboard shortcuts I know and love on my Mac. Office for iPad has plenty, and Microsoft has lists for Word

Tap the icon in the bottom right of the Dropbox window to edit a document in Office.





Choose from two methods to add your Dropbox account to an iPad.

the two cells, bringing up the copy menu where you'll find the Fill option. Tap on it, then drag the proper arrow in the direction you'd like to continue the sequence. When you lift up your finger, the cells are filled automatically.

Match formatting

Even when an app is touch-optimised, repeating tasks can be a bit taxing and tedious, and that definitely includes trying to match formatting between sections of your document.

Start by highlighting a block of text with the format you want to reproduce, and tap Copy in the popup. Next, highlight the text you want to apply the formatting to, and select Paste Formatting from the list of options.

Laser beams

Okay, so there are actually no lasers to be found in the Office apps. There is, however, a fake laser buried within PowerPoint's presentation mode. While presenting, presumably from your iPad to an Apple TV or projector, you can tap and hold on the device's screen to bring up a fake laser icon that moves around under your finger.

(tinyurl.com/oqo3tkx), Excel (tinyurl.com/oba8sb2), and PowerPoint (tinyurl.com/nfnromo). Take a while to peruse them, but they should immediately seem familiar – cut, copy, paste, select all, and undo are among the shortcuts that will immediately speed up your workflow.

You'll even find shortcuts for navigating your documents using, say, Alt and the arrow keys, for example, to move the cursor up and down by a paragraph in Word. It might seem strange at first to navigate with the keyboard's arrow keys when you could just reach out and touch the iPad's screen. But if you're used to reaching for these shortcuts on your Mac's keyboard, using them on your iPad's external keyboard will have you feeling right at home.

Save local copies

Storing a document in the cloud is fine, so long as you know you're going to have a data connection of some sort. If you have a big presentation coming up, don't let something like a broken Wi-Fi network ruin it for you. Save the document to your iOS device as a backup.

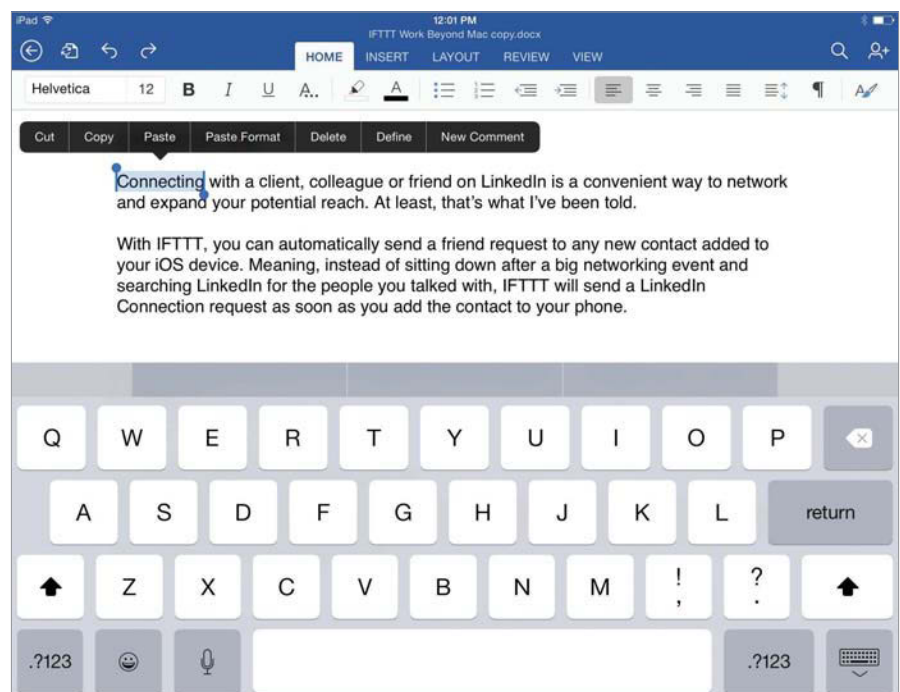
To do this, while viewing the file you want to save, tap on the document icon with the two arrows making a circle. From the list of options, select Duplicate, then

Matching formats is just a tap away.

choose your device from the list of storage options.

Autofill in Excel

Typing a long list of repetitive dates, numbers, and so on – repetitive anything, really – into your Excel spreadsheet is a hassle. Thankfully, the time-saving Autofill feature from the desktop version has made it into Excel on iOS. Start by filling in the first two cells, setting the pattern for Excel to understand. Then highlight



Calendar tips for iOS

Ben Patterson's 10 tips will ensure that you never miss an important appointment

The sparse, ultra-simplified Calendar app for iOS is so simple, you may find yourself scratching your head when it comes to performing the most basic of tasks, such as checking which appointments you have on a given day.

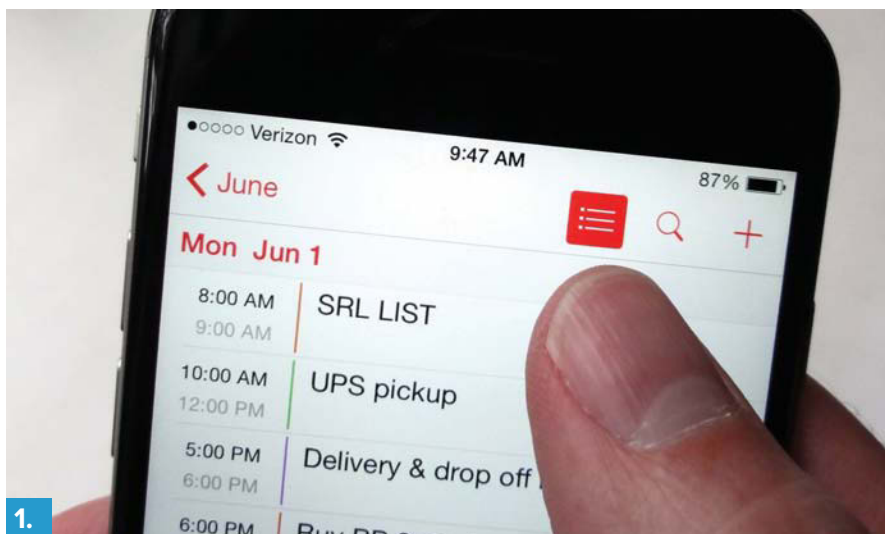
Indeed, sharing a calendar with a friend can be something of a puzzle until you know which tiny, nondescript button to tap – same goes for seeing the entire week at a glance, viewing a list of all your upcoming events, or changing the colour of a specific calendar.

We've 10 tips that'll help you get your bearings with Calendar, as well as a few advanced pointers on setting default alert times, dealing with time-zone changes, syncing a non-iCloud calendar, and more.

1. Switch between daily and 'list' view

If you tap on a date in Calendar on your iPhone, you'll get an expanded view of your daily appointments. Scroll up and down to see which hours are free and which are booked, with each event colour-coded depending on the calendar to which it's assigned. Swipe back and forth to see the next day or the last, or tap the Back button to see your entire month.

Well, good news – Apple hasn't jettisoned this 'list' view from Calendar.



Instead, it's hiding in plain sight. In the 'day' view, you'll find the List button (it looks like a tiny bulleted list) in the top-right corner of the screen, to the left of the Search button. Tap it, and your upcoming events will be arranged in one big, scrollable list.

Note: There's no 'list' button in the iPad version Calendar – instead, you'll have to settle for the monthly view, which boasts details for each day's events.

2. See event details from the month view

The standard month view in Calendars for iPhone offers a blank, rather unhelpful

grid of dates – tap one, and you'll jump to the expanded daily view. Want to see the whole month again? You'll have to tap the Back button.

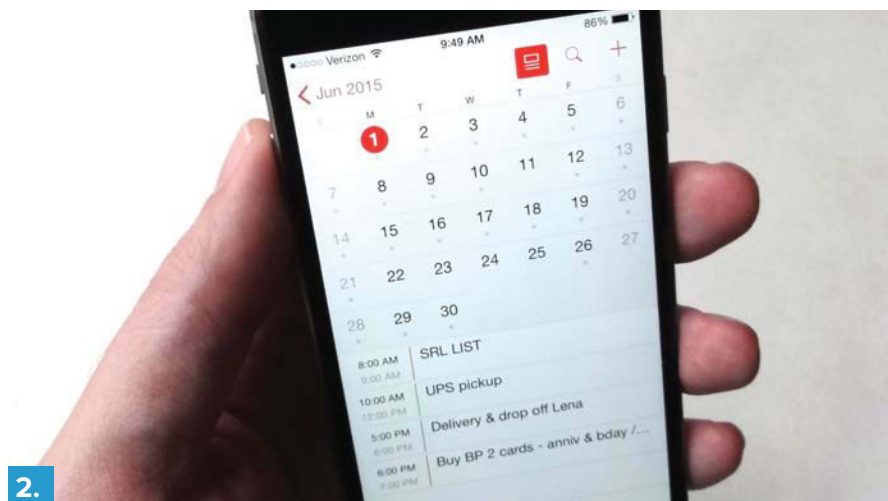
That's the routine, unless you use the Details button, which sits unobtrusively next to the Search button in the top corner of the screen. Tap the Details button, and a list of events for the selected date will slide into view, with the rest of the month still visible. Tap another day of the month, and you'll see the events for that day. You can even switch months by swiping up and down.

3. See your entire week on your iPhone

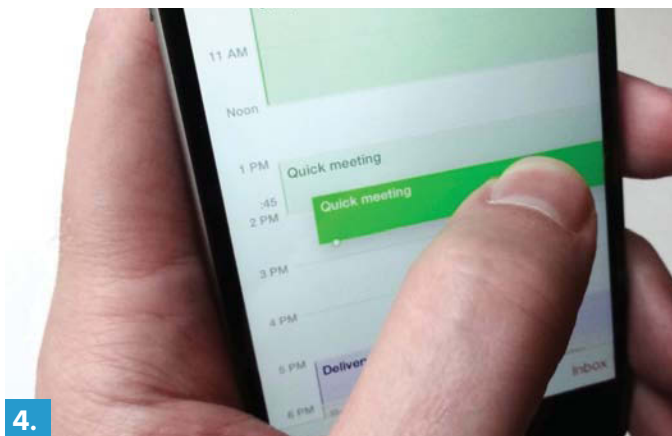
The iPad version of the Calendar app has four clearly marked views to choose from: Day, Week, Month and Year. On an iPhone, the Day, Month and Year views are easy to find, but what about the Week view? Just tilt your iPhone into landscape orientation. When you do, your week will twirl into view, no matter which calendar view you were checking.

4. Drag-and-drop calendar events

The most obvious way to change the time of an event in Calendar is to tap it and edit its 'start' and 'end' times, but there's actually a easier way.



2.



4.

Just tap and hold an event until it pulses, then drag it anywhere you like in your calendar. You can also grab one of the little handles above or below an event to pad it out or cut it short.

5. Ask Siri to add or change an event

If you want to add or edit a calendar appointment without any tapping at all, just ask Siri. For example, you can say “Add a meeting to my calendar” or “move my 12pm meeting,” and Siri will take care of the rest, asking you to fill in any blanks.

6. Share a calendar with a pal

In just a few taps, you can let any fellow iCloud user view and/or edit any of your calendars. Where do you tap, though?

First, tap the Calendars button at the bottom of the screen to see a list of all your iCloud calendars. Now, see the little ‘info’ button next to each calendar? Tap one, then tap the ‘Add Person’ link in the ‘Shared with’ section. Go ahead and add anyone you like – well, anyone with an iCloud account, that is.



5.

7. Turn off shared calendar alerts

If you share a calendar with someone and give them editing privileges, you’re going to start getting alerts whenever that person adds, edits, or deletes events from your shared calendar. That can be handy if you need reminders of new and nixed appointments, but all those alerts can get pretty annoying – particularly given that they’ll pop up on all your connected iCloud devices.

To these off, go back to the Calendars button at the bottom of the screen, tap the ‘info’ button next to the calendar you’ve shared, then flip off the ‘Show Changes’ switch.

8. Change the colour of a calendar

Each of your events in Calendar is colour-coded depending on which of your various calendars the events were created on. If you’re not happy with the colour of a given calendar, there’s an easy fix. Tap the Calendars link at the bottom of the screen (again), tap the ‘info’ button next to a calendar, then pick a new hue under the Colour section.

9. Set a default alert time

There’s no need to waste precious seconds setting up an alert each and every time you add a Calendar event on your iPhone and iPad. Instead, just set up a default alert time that will apply to each new event going forward.

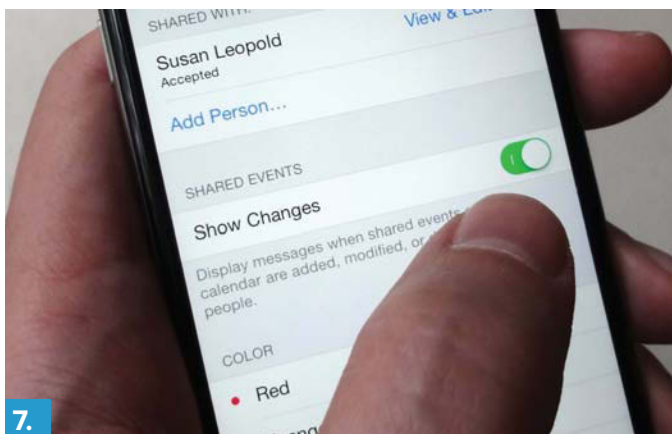
From the iOS home screen, go to *Settings* → *Mail, Calendars, Contacts*, scroll down to the Calendars section, tap Default Alerts Times, then pick an option: anything from five minutes before an event to a full week beforehand.

You can also set up separate default alerts for regular events.

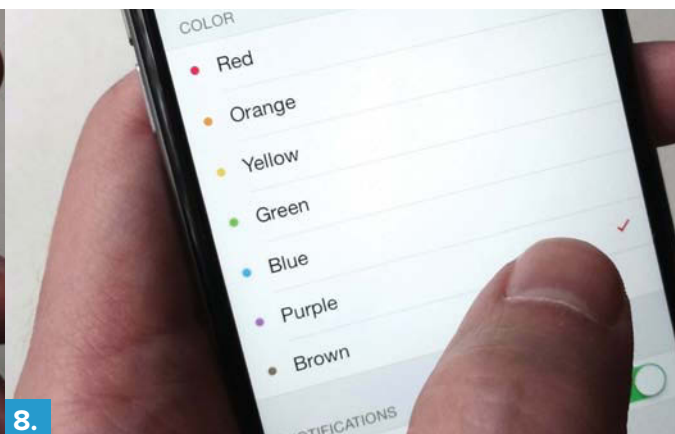
10. Start the week whenever you want

According to most Western calendars, Sunday marks the beginning of each week. If for you, though, Monday (or Tuesday, or even Wednesday) feels like the start of your week, no problem.

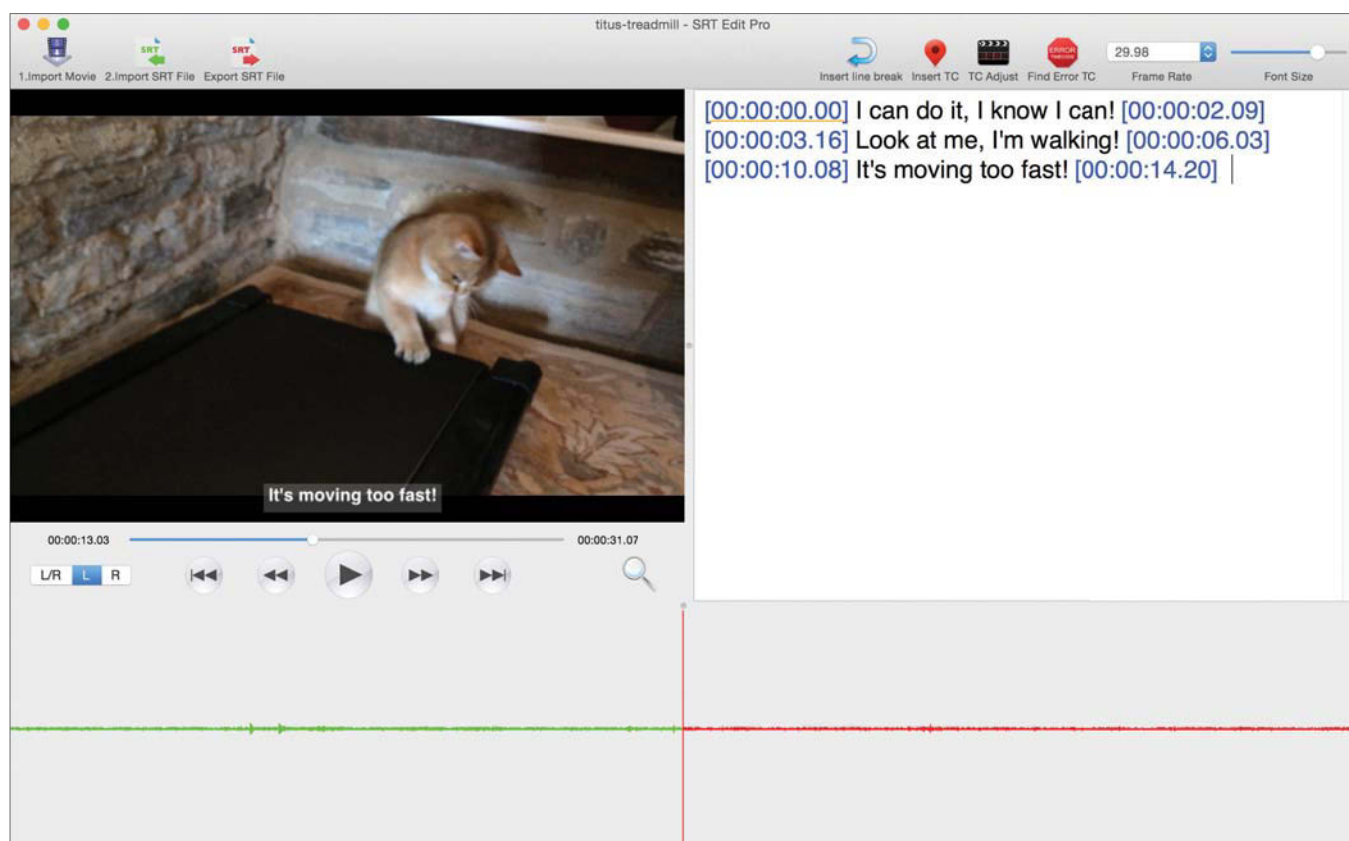
Go back to the ‘Mail, Calendars, Contacts’ section in the main iOS Settings screen, tap the Start Week On setting, then pick a day.



7.



8.



Ripping DVDs with subtitles

Kirk McElhearn reveals everything you need to know about ripping DVDs with subtitles

If you like watching foreign-language films, you may find that, when seeking out new films, you can only get the movie you want in a version without subtitles. This is great if you're bi- or multi-lingual, but if not, you really need to know what the actors are saying.

In this article, I'm going to look at subtitles: how you can play them in movies that already contain them, how you can add them to movies you rip from DVDs, and how you can create your own subtitles or captions.

Switch languages with iTunes Store movies

Some movies you buy in the iTunes Store come with multiple language tracks and subtitles. You can access these in iTunes by starting to play a movie and then clicking the speech balloon button. From this menu, select the audio or subtitles language (or closed captioning) you want.

You can also use iTunes' *Controls* → *Audio & Subtitles* command.

On an iOS device, tap the similar button at the bottom of the Videos screen to choose from the same options.

On the Apple TV, these options are hidden. To access them, press and hold the Select button (the centre button) on your remote. You'll see three tabs: Chapters, Subtitles and Audio. Select the tab you want, then choose your language.

Add subtitles to DVD rips

If you buy foreign movies on DVD and you get them from the country where they're produced, they may not have subtitles for English or for another language you speak. If you rip these DVDs, you can add subtitles to them.

First, let's take a DVD that already has subtitles. In Handbrake (handbrake.fr), after you've chosen your ripping settings, click the Subtitles tab. Under Track, click

on the pop-up menu. If subtitles are available, select your language.

If there are no subtitles, then you need to find them. There are a number of crowd-sourced subtitle repositories you can check, such as opensubtitles.org. Find your movie or TV programme and then download the subtitles. These will be in an .srt file.

In Handbrake, click the Track pop-up menu in the Subtitles tab and then choose Add External SRT. Select your file, and then click OK. You have three options. Enable Forced Only if your subtitles are for a film that has some sections in a language different from the audio track. For example, in a James Bond movie, when characters are speaking Russian, you'll see subtitles (unless you're listening to a Russian audio track). Enable Burned In if you want the subtitles to be permanently planted in the video; in this case, you can never turn



them off. Finally, check Default if you want the subtitles to be turned on by default.

During playback, in iTunes or on the Apple TV, you can choose the subtitles as described above, unless they're burned in. In this case, they'll always appear. If you play back the video with other software, such as VLC, choose the Subtitles menu to set subtitles.

Subtitles from opensubtitles.org may not be perfect. As I said, these are crowd-sourced, and there may be glitches, or translations that are not as good as what professional translators may provide. But it's better than nothing.

If you want to add subtitles to movies you've already ripped, you can do that using Subler (tinyurl.com/neu6abw). This app will allow you to add .srt files to existing videos.

Roll your own subtitles

An .srt file is simply a text file formatted in a specific way. You can create your own subtitles and add them to your movies, as described above. To do this, you can either use a text editor or a dedicated tool for creating .srt files. Using a text editor is complicated because you need to know the precise time codes.

Here's what .srt files look like. Each subtitle has a number, and its duration on screen is specified by time codes. Time codes are in the format hours:minutes:seconds,milliseconds.

```
0
00:00:00,000 --> 00:00:02,300
I can do it, I know I can!
```

```
1
00:00:03,533 --> 00:00:06,100
Look at me, I'm walking!
```

```
2
00:00:10,266 --> 00:00:14,667
It's moving too fast!
```

A great tool for creating and editing .srt files is bin liu's SRT Edit Pro (£7.99, tinyurl.com/q6qq8p9). This app allows you to see your video and an audio waveform (so you can tell when dialog begins and ends), and lets you insert time codes and subtitles.

Find where you want a subtitle to begin and click Insert TC. Type your subtitle after the time code and then, at the location where you want the subtitle to no longer be visible, click Insert TC again. Continue through your video. You

Some movies from the iTunes Store come with multiple languages and subtitles.

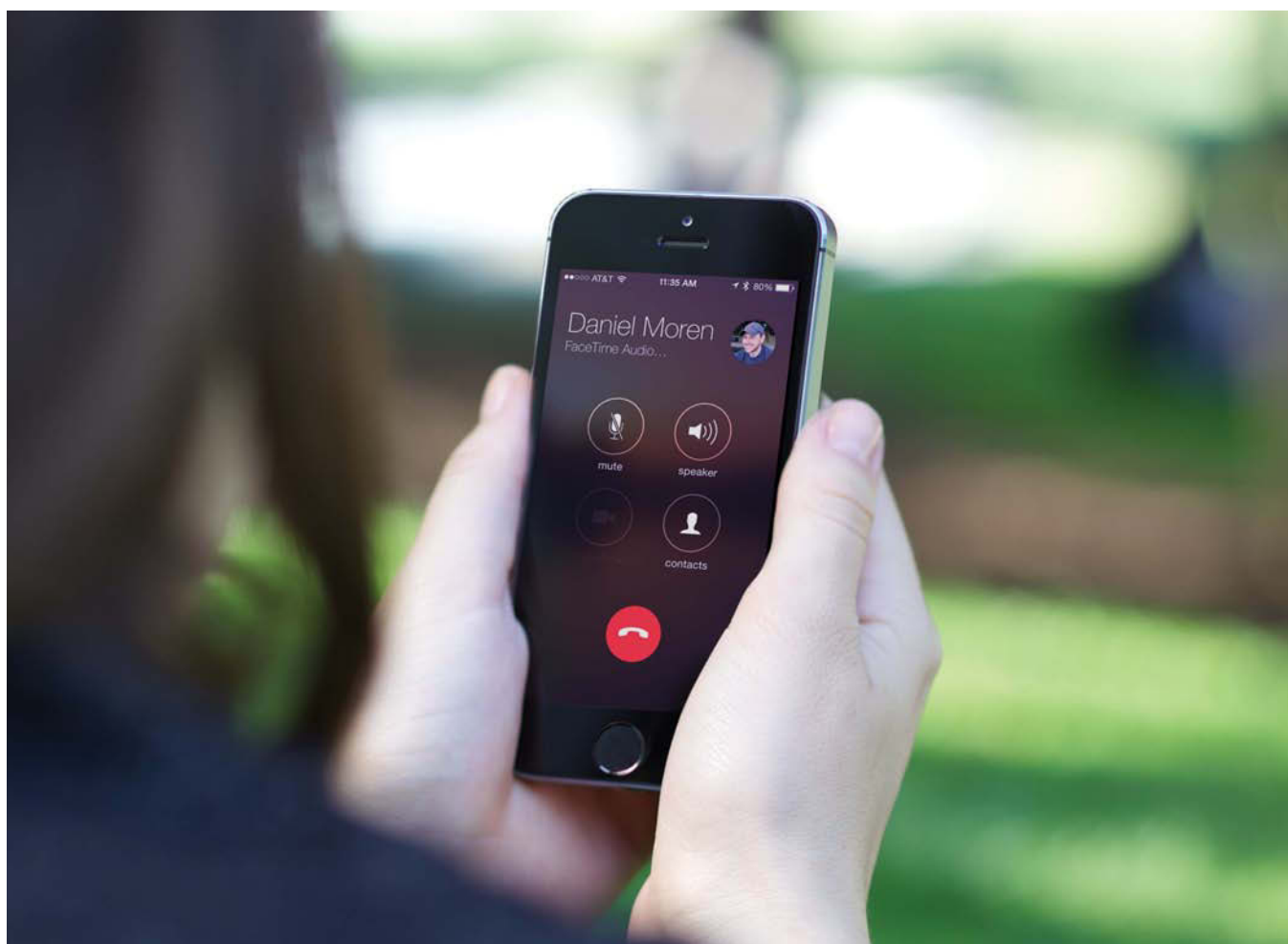
can use the audio wave form to show you when dialog begins and ends. It's best if your subtitles correspond to the timings of people speaking.

You can also use SRT Edit Pro to edit existing .srt files that you've downloaded, if you want to make corrections to them. Once you have your .srt file, you can add it to your video with Handbrake, as explained above.

If you're making your own subtitles, I have some tips that can help you make them easier to read. Back in the day, when I worked as translator, I translated a number of French movies for English subtitles. This was before the type of software that's now available. I was given time sheets with time codes and character counts and little else. The standard was no more than 18 characters per second, with no more than around 36 characters per line. A subtitle should never overlay a cut; in other words, if you have some dialog with shots that cut back and forth, you should try to make each of your subtitles fit with a single shot. You may need to compress the text by leaving out some words.

If you want to know more, the BBC (tinyurl.com/p39qt8q) has an excellent guide to subtitling for closed captions, but the principles are the same for foreign language subtitles.

If you have some dialogue with shots that cut back and forth, you should try to make each of your subtitles fit with a single shot



Messages and FaceTime tips

Christopher Null reveals how to solve the five biggest Messages and FaceTime annoyances

Apple's messaging system works brilliantly – most of the time. So, when something goes wrong, it's easy to become frustrated. Shouldn't these things just work?

To understand FaceTime and Messages on their own, it helps to understand how these services work together. To start, there's Messages – the OS X and iOS hub for instant messaging platforms, iMessages, and SMS-based text messages. Within Messages, you'll also find your iMessage conversations, the text-like messages that replace standard SMS texts when you're messaging between Apple devices. Finally, there's FaceTime, an OS X and iOS app that handles real-time video

chatting. (FaceTime replaced iChat on the Mac a few years ago.)

They're intertwined, and when a problem crops up on one service, it tends to impact the other. Here's how to get five big Messages and FaceTime annoyances under control.

1. Messages aren't delivered

The dreaded 'Not Delivered' notification in Messages can have a wide range of causes. Often this has to do with a temporary iCloud outage, which is required for Messages to work. If the problem persists after attempting to resend, try sending the message or photo as a standard text message.

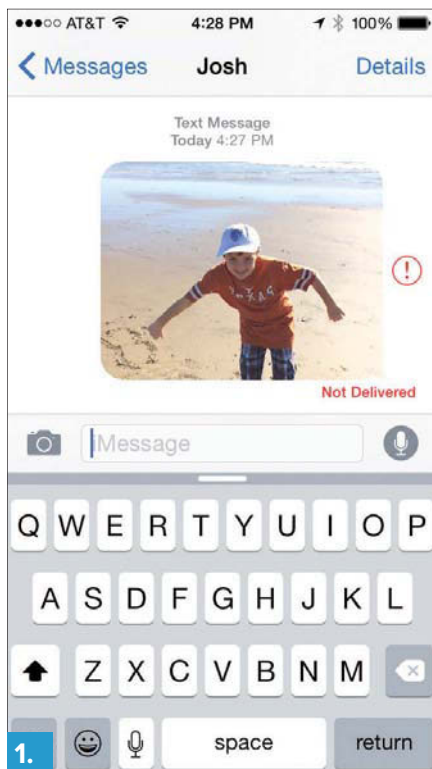
Sometimes, you'll see that option within individual messages on your

iPhone or iPad by tapping on the red exclamation point, but if not, tap over to *Settings* → *Messages* and turn off iMessage, then try sending again (as a standard SMS). Re-login to iCloud under *Settings* → *iCloud*, then turn Messages back on. Try sending a new message to the same contact to see if the problem is resolved.

For long-running iMessage issues, you may need to reset your settings via *Settings* → *General* → *Reset* → *Reset All Settings*. This will of course require you to reconfigure some app and iOS options.

2. An Android phone can't receive text messages from iOS devices

On an iPhone, iMessage is tied to your phone number, not just your Apple ID. If



When in, doubt try again.

you switch from an iPhone to a non-Apple smartphone without deactivating iMessage first, iOS users will receive a bounce-back message when they try to message you – and you won't receive any messages from Apple devices at all. It's an easy mistake to make, but once you've moved to a new phone on a different platform, there's really no going back. Fortunately, Apple released a fix for this issue for users who find their text messages in limbo. Visit Apple's Deregister iMessage page (tinyurl.com/nz7dh84) and follow the instructions.

3. Can't receive or make calls through FaceTime

Video calls aren't going out or coming in? Start with checking for a software update – FaceTime can be finicky if you aren't using the latest version of iOS or OS X – and ask the person on the other end of the line to update their operating system, too. Check that you have a strong wireless signal (preferably Wi-Fi, or ethernet if you're on a Mac) and that your

Apple now makes it easy to deactivate iMessage if you leave the iPhoneverse.



For the best results ensure Date & Time are set to 'Set Automatically'.

date and time are set correctly (this too can cause FaceTime to freak out). If none of these are the culprit (and a reboot doesn't help), you might be dealing with a firewall issue. Check out Apple's (advanced) guide to opening ports for FaceTime and iMessage.

4. FaceTime or iMessage are stuck trying to activate

One of the strangest (yet surprisingly common) error messages on FaceTime

reads: 'Could not sign in. Please check your network connection and try again.' Similarly, if you check under *Settings* → *Messages* you might see a 'Waiting for activation...' notice.

To repair these issues on iOS, visit *Settings* → *FaceTime* and tap your Apple ID. Next, tap Change Location and ensure the correct country is activated. Follow the same procedure under *Settings* → *Messages* → *Send & Receive*. Make sure you are logged in to the respective services with the correct password. Then, reset your device by holding the home and power buttons down simultaneously.

If this doesn't fix the issue, you might need to change your device's DNS settings. Try entering the settings for Google's public DNS servers, which could resolve your issue:

Under *Settings* → *Wi-Fi*, tap the name of your network. Tap DNS and enter '8.8.8.8, 8.8.4.4' (without quotes).

5. Multiple iOS devices/ Macs ring simultaneously when receiving calls

If you're among the Mac faithful and you get an incoming voice call, you might jump when your iPhone, iPad, and MacBook all begin to ring at the same time. This is thanks to an OS X Yosemite/iOS 8 feature called Handoff, which works as a call-forwarding system (among many other things). If you don't like your Mac ringing when your phone is at arm's length, here's an easy fix on your iPhone. Just visit *Settings* → *FaceTime* and switch 'iPhone Cellular Calls' to off.

No longer have your iPhone?

Follow the steps below to deregister your phone number.

1 Enter your phone number

Enter the phone number you want to deregister from iMessage and we'll send you a confirmation code.

2 Enter confirmation code

Enter the 6-digit code we sent to you to confirm deregistration. Didn't receive a code?

Phone Number

This text message is free.

Confirmation Code

[Resend code.](#)

2.

Getting back into the groove

How the iPad can get its groove back and halt the decline in sales

Force of nature

Right out of the gate, the iPad had to overcome a fair amount of criticism, and the biggest objection was its similarity to the iPhone. It wasn't just the single-button design – the iPad ran an operating system nearly identical to the iPhone's and didn't introduce a single new feature, unless you count the ability to rotate the home screen to work in landscape mode.

And five years later, not much has changed. The problem isn't so much that the iPad feels like a large iPhone. It's that there aren't enough compelling features to separate it from its smaller sibling.

Each generation of iPhone introduces a features that makes us want it, but not many iPad models have been must-haves. iPad Air came close, but even with its slimmed-down case and toned bezels, it lacked a real killer feature (Touch ID from the iPhone 5s, for example) to push it over the top. If Apple wants the iPad to be a biennial product like the iPhone, we need more reasons to upgrade beyond better comfort and weight.

This year, that could be Force Touch – the combination of multi-touch and the iPad's large screen could bring the technology to another level. It could offer a greater experience, with taptic feedback while typing and floating contextual menus that bring options and palettes to our fingertips.

Task manager

If the iPad Air 3 lacks any killer new hardware features, what about special software capabilities? It seems clear that Apple isn't going to release a hybrid operating system anytime soon, but iOS doesn't have to be as limiting as Apple makes it. Year after year, Apple has stopped short of adding iPad-only features, and as iOS matures, very little about it feels as though it was built with a tablet-sized screen in mind.

The most obvious change is multitasking. As it stands, multitasking on iOS amounts to little more than switching between apps via the carousel. It's not just an overdue feature, it's probably the most sought-after one since copy and paste, and if done right, could give the iPad a much-needed boost in the productivity department.

Remote control

Despite its abilities, there's still an overall perception that the iPad is a secondary device, used for small tasks and consuming content, rather than doing actual work. To that end, Apple recently launched an ad campaign to spotlight the myriad ways to get things done on the iPad. But to position it as a powerful device that 'changes everything', Apple should build a closer relationship between the iPad and the Mac.

We've seen glimpses of how nicely the two can play together with things like Handoff and Continuity, but with a screen

closer in size to the one on the new MacBook than the iPhone 6 Plus, the iPad is in a unique position. Even if Apple never adapts OS X for multitouch, it could still merge the two operating systems and transform the iPad into a versatile device that adapts to however you happen to be working.

Go Pro

For nearly a year now, rumours have pointed to a new kind of iPad – think of it as the opposite of the iPad mini. The so-called iPad Pro caters to users who want an even larger screen. A 12in iPad might seem like the nichest of niche products, but when you break it down, it might not be so crazy.

Back in 2012 when I bought the 15in MacBook Pro with Retina Display, I assumed it would be the last Mac I every purchased. Based on cost, future OS X support, and my heavier reliance on the iPad, I estimated a seven- to eight-year life span for the machine, an eternity in the tech world. It seemed logical that by 2020 there would be a new class of device to close the gap between our tablets and notebooks. If the iPad Pro is real, it could bring us closer to that seeming inevitability, requiring developers to rethink the capabilities and interfaces of their apps once again.

A giant screen would suggest a different iOS experience—perhaps one that finally ditches the icon grid or adds a Dashboard-style widget environment. But to really attract users on either side of the fence, Apple could make the iPad Pro the first iOS device to use USB-C. Using a USB-C charging port instead of Lightning would open the iPad Pro up to a world of expansive, productive and file-sharing capabilities. That alone could be reason enough for people to ditch their fully working iPads to upgrade to a new one.



iPad & iPhone User magazine is the essential guide for all things iOS-related
DOWNLOAD THE LATEST ISSUE TODAY



Every issue is full of the latest app reviews, gaming, tutorials, buying advice & more

Complete guide to Apple devices

EVERYTHING YOU NEED TO KNOW ABOUT MACS, IPHONES, IPADS, IPODS AND OTHER APPLE PRODUCTS

Welcome to *Macworld's* in-depth guide to every Mac, iPad, iPhone and iPod that Apple makes, as well as other hardware and software that comes out of Apple's HQ in Cupertino, California. The first two pages offer a quick summary, with detailed looks on the following pages.

Apple makes six different kinds of Mac, and each has subcategories and variations in specs and features. Some Macs are faster and more

powerful, while other Macs have slower processors but are cheaper. This guide should help you identify which Mac best suits your needs.

There are now four different iPhones and five iPads to choose from, along with a collection of iPods and the Apple TV. Plus, we should soon see the launch of the Apple Watch. Read on to understand every product that Apple makes.

MacBook Air **MARCH 2015**

The MacBook Air is Apple's ultrathin and incredibly light laptop, sometimes referred to as an ultrabook. It comes in two screen sizes, 11in and 13in. Apple's cheapest MacBook Air costs £749. The range was updated in March 2015.



MacBook Pro **MARCH 2015** **MAY 2015**

There are two types of MacBook Pro available: one with a high-resolution Retina display and flash storage; and a simple version, which is the only Mac to feature a CD/DVD drive (the model hasn't been updated since 2012). There are two screen sizes of MacBook Pro Retina available: a 13in and a 15in. The 13in was updated in March 2015, and the 15in in May 2015. It is more powerful than the MacBook Air, but the prices are a lot closer than they used to be. The cheapest MacBook Pro costs £999.



Mac mini **OCT 2014**

The Mac mini is a compact desktop computer measuring less than 20x20cm and is Apple's cheapest Mac, starting at just £399 – the same price as a 16GB iPad Air 2. It features an HDMI port, which makes this computer a popular option for a home media centre as you can plug it directly into your TV screen.

Mac Pro **DEC 2013**

The Mac Pro is Apple's professional Mac with a price tag to match – it starts at £2,499. It's a fully fledged workstation aimed at those who need the ultimate in power.



iMac **OCT 2014** **SEPT 2013** **MAY 2015**

The iMac is incredibly thin, with the whole computer concealed behind the gorgeous display. There are two different sizes of iMac available: the 21.5in and the 27in. The cheapest iMac costs £899. A new £1,599 Retina Mac has joined the flagship 5K Retina Mac introduced in October 2014.



MacBook **APRIL 2015**

This is Apple's newest Mac. It's built more for style and portability than for the practicalities of computing – it has only one port and a basic processor – but it does have a Retina display, and it does come in gold, silver and space grey, just like your iPhone. This new Mac model went on sale in April 2015.



iPad Air **OCT 2014**

The iPad Air is Apple's biggest tablet. There are two models, both with a 9.7in Retina display: the original iPad Air, launched in 2013, and the iPad Air 2 with Touch ID, released in October 2014. The newer model is thinner, faster and more powerful, and there is a gold finish available as well as the original black and silver variants. The older iPad Air costs £319 (16GB) or £359 (32GB).

The iPad Air 2 costs £399 (16GB), £479 (64GB) or £559 (128GB). You can buy an iPad with just Wi-Fi or with Wi-Fi and cellular coverage – add £100 to get the price with cellular coverage.



iPhone 6 Plus **SEPT 2014**

The new iPhone 6 Plus is Apple's first phablet-style phone. Phablet is the name used for phones that are so big that they are like small tablets. The



iPhone 6 Plus has a 5.5in screen, so it's really not very much smaller than the iPad mini. In addition to the bigger, better screen, the iPhone 6 Plus comes with a better camera than the iPhone 6. Prices start at £615 for the 16GB version; the 64GB version costs £699 while the 128GB iPhone 6 Plus costs £789.

iPhone 5s **SEPT 2013**

The 5s is the iPhone that Apple introduced in September 2013. It's available in gold, silver or grey and has a Touch ID button allowing fingerprint scanning for security, rather than the older-style home button with a square in the middle. The Touch ID button is the most obvious difference. Apple is now selling only 16GB (£459) and 32GB (£499) models of the iPhone 5s.



iPad mini **OCT 2014**

Apple sells three different iPad mini tablets. There's the original iPad mini, first launched in 2012 and now available for £199 (16GB). There is the iPad mini 2, launched in 2013, which costs £239 for the 16GB version, or £279 for 32GB.



And there is an iPad mini 3, launched in October 2014 and starting at £399 for 16GB, £399 (64GB) and £479 (128GB). All three models are of a similar size with 7.9in screens. The original iPad mini lacks a Retina display, and only the iPad mini 3 offers Touch ID. Like the Air, you can pay £100 more to get a cellular version so that you can surf using 3G or 4G.

iPhone 6 **SEPT 2014**

The iPhone 6 has a bigger screen than the iPhone 5s: 4.7in (measured diagonally, corner to corner) compared to the 4in of the 5s. The iPhone 6 is also thinner and lighter than the previous year's model. Like the iPhone 6 Plus, the iPhone 6 also comes equipped with a better A8 processor and an NFC chip for mobile payments. It costs £539 (16GB), £619 (64GB) or £699 (128GB).



iPhone 5c **SEPT 2013**

The iPhone 5c has a polycarbonate (plastic) shell that is available in six bright colours. Apple released the iPhone 5c alongside the iPhone 5s in September 2013. On the inside the 5c is pretty similar to the iPhone 5, although the camera on the 5s is a better model. Apple sells an 8GB iPhone 5c for £319.



iPod **SEPT 2012**

When Apple introduced the iPod in 2001, it started a revolution that eventually ushered in the iPhone and the iPad. The original iPod is now long gone, and the company no longer sells the iPod classic, which was most like the original. However, you can still buy a number of different iPods. There's the iPod touch (from £159), which is as close as you can get to an iPhone without the phone, the iPod nano (£129) and the iPod shuffle (£40). The original iPod was a music player that famously allowed you to carry 1,000 songs in your pocket. Today's iPod touch lets you watch videos and download apps from the iOS App Store. The iPods haven't been updated since 2012 (except for a small tweak to the iPod touch in 2013).



Apple TV **JAN 2013**

The Apple TV is a 10cm square box that measures less than an inch high. You plug the device into your HDTV so that you can watch movies and TV shows from the iTunes Store. You can also play content from Netflix (for a £5.99 a month subscription), view videos on YouTube and Vimeo, and stream music and photos from iCloud. You can also view whatever is on your iPhone, iPad and iPod touchscreen, and push content from your Mac to your TV screen. The Apple TV costs £79, but the hardware hasn't been updated since 2012.



Apple Watch **APRIL 2015**

Apple unveiled its first foray into wearable technology in September 2014, and six months later launched. There are 38 different Apple Watches available – thanks to the combination of the three different Apple Watch categories, two different face sizes, and the accompaniment of straps. Apple has said that Apple Watch prices will start at £299 for the 38mm Apple Watch Sport or £339 for the 42mm version. The Stainless Steel Apple Watch will cost from £479, while the 18-carat gold Apple Watch Edition will cost from £8,000.



Apple Store

HOW AND WHERE TO BUY YOUR APPLE PRODUCTS

It's easy to buy a brand-new Mac, iPad or iPhone from Apple. The simplest way is to go to store.apple.com/uk to purchase from the online store. Here you will find every current Mac, iPad and iPhone, and lots of accessories. Alternatively, if you'd prefer to try the product out, you could walk into the Apple Store on your high street or in your closest shopping mall. Not sure where your closest Apple Store is located? Apple has stores all over the country, 39 in total, and you can look for your local store at apple.com/uk/retail.

Unfortunately, as a rule Macs are not cheap but if you are looking for a bargain you can also pick up a Mac, iPad or iPhone second-hand from Apple. It's possible to buy refurbished Apple Macs, iPads, and other of the company's products, from a special section of the online store. Go to store.apple.com/uk and scroll to the bottom of the page where you will see a link to Refurbished & Clearance.

Refurbished Macs and iPads are likely to be brand new but returned models (if it is from a previous year) or reconditioned current devices. A reconditioned Mac could be an ex-demonstration model used during Apple teaching programmes, or a unit sold to a customer who subsequently decided to return it. The returned unit may have been faulty (and fixed) or may simply have been returned under the standard sale-and-returns procedure – Apple allows any customer to return a Mac bought from the Apple Store within 14 days for a refund as part of its standard returns policy.

The important thing to note is that Macs bought from the Apple Refurb Store are not discernibly different from new ones bought direct from the Apple Store. All the Macs bought from the Apple Refurb Store are cleaned, checked, tested and visually indistinguishable from brand-new models.

The only noticeable difference in our experience is that an Apple refurb Mac will be packaged in a brown box rather than the white retail box they normally arrive in. Aside from that, we have yet to pick up a Mac from the Refurb Store and find it wanting.

The price for reconditioned Macs changes frequently but is typically 10- to 20 percent less



Apple's online store can be found at store.apple.com/uk.

than the original price. With Macs commanding a high retail price, this reduction can represent quite a difference. For example, you can find a 2014 (that's the current generation) 1.4GHz iMac on the Refurb Store for £759 – a £140 saving on the £899 you'd pay for the exact same model in the Apple Store. There are even bigger savings to be made on older models. You can also find refurbished iPads on the store, but Apple doesn't resell second-hand iPhones.

You may also be able to get a deal on a new Mac by picking up one from your local Apple reseller, such as John Lewis and PC World, or Apple premium resellers like iStore, Stormfront, Solutions Inc, Western Computers and KRCS. They do have sales, and although Apple bargains are rare, they do come along occasionally.

However, you should beware that because Apple is strict with pricing and the margin that third-party retailers can make, it is rare that you will find a genuine bargain when buying a new Apple product from someone other than

Apple. You should always first visit Apple's online store to find out what is on offer from the mothership, and make sure that if you are buying an outdated model you are doing so knowingly. Copy down the specification and product code of the model you want, and use that in your search. If you know what to look for you could grab a bargain – just make sure that you aren't buying last year's model while being sold the idea of this year's.

One of the benefits of buying from Apple is its warranty and returns procedure, even for refurbished products. Apple states: "Before we put a refurbished Mac, iPod, iPad or Apple TV up for sale in special deals, it undergoes a rigorous refurbishment process to make sure it's up to Apple's tough quality standards."

More importantly, a reconditioned Mac comes with the same one-year warranty (extendable to three years with AppleCare protection). You also get the same sales and return procedure with Apple, and can return a Mac bought from the Refurb Store within 14 days if you're not happy with it.

The key thing, as always, is to know exactly what you want, and exactly what you are getting, especially if you are buying from a private seller. Get it all in writing, and if at all possible view the device you are buying, and use it, before you purchase. Always use a credit card to make expensive purchases, or a secure payment service such as PayPal. This will make it much easier to chase up if there is a problem. And remember, if it looks too good to be true, then it probably is: you really want to see proof of purchase before you buy a second-hand Mac to ensure it hasn't been stolen



Apple Store, Covent Garden, London



Apple Store, Regent Street, London

MacBook

THE LATEST ADDITION TO APPLE'S LAPTOP LINE-UP

There are actually two standard MacBook models available, both with a 12in screen (measured diagonally). Dimensions for both unit are identical: 28.05cm by 19.65cm, and 3.5mm at the edge tapering to 131mm thick (the MacBook Air tapers from 17mm to just 3mm). The new MacBook weighs less than a kilogram at 920g.

The key difference between the two models is the amount of storage available, and the speed of the processor, although the most obvious difference is that there are three colour choices: gold, silver and space grey, just like the iPhone.

The entry-level MacBook unit offers a 1.1GHz dual-core Intel Core M processor (Turbo Boost up to 2.4GHz), and 256GB PCIe-based flash storage. The other MacBook unit offers a 1.2GHz dual-core Intel Core M processor (Turbo Boost up to 2.6GHz), and 512GB PCIe-based flash storage. Both models offer 8GB RAM and Intel HD Graphics 5300.

There don't appear to be any build-to-order options, which would normally allow you to add a faster Intel processor, more storage, and more RAM.

However, Apple did indicate in its press release announcing the product that there would be.

The new MacBook sports many new features including a Force Touch trackpad that utilises built-in force sensors so that when you click you receive haptic feedback, and Force Click – this adds a new dimension to clicking, a new way of right-clicking, perhaps. There is also a new keyboard with keys slightly more spaced out



than previously. Many of the new technologies incorporated in the new design have allowed Apple to make it slimmer and as lighter than any other Mac. For example, thanks to the new Core M chip the MacBook doesn't require fans, and by slimming down the logicboard Apple has been able to utilize every last corner for battery. Apple claims the MacBook is the "world's most energy efficient notebook".

Even the Retina display is the thinnest screen ever on a Mac. It offers a 16:10 aspect ratio and a resolution of 2304x1440. It also uses less energy than Retina displays on other Macs.

Apple admits that the MacBook is designed for the wireless world, and it has to be: there is only one port. This next generation USB-C port will support power in and out, so you can charge your MacBook from it, as well as plug in a hard drive or other peripherals. You will need an adaptor if you are hoping to plug more than one device in at a time, though.

MacBook Connections

The MacBook infamously had only one port (plus a headphone port). That's the trade-off required for Apple to create such a thin Mac. The single port is USB-C, which is a new industry standard that offers 5Gb/s data transfer via USB 3.1, as well as charging and DisplayPort 1.2. You will be able to plug anything into that port – but you will require an adaptor if you want to plug more than one thing in at a time.

Like the MacBook Air, the MacBook doesn't feature an Ethernet port, so if you want to plug it into a wired network at work or on holiday you will need to purchase an adaptor. However, the MacBook does offer 802.11ac Wi-Fi so it's unlikely that in today's wireless world you will need to plug it into a network.

Speed

The MacBook will not be Apple's fastest Mac, tests of other computers that use

the same chip suggests that the MacBook will be slower than last year's entry level MacBook Air, however, it does at least feature a SSD drive, so it could prove faster than Apple's other slowest Macs: the £899 iMac and the £399 Mac mini which utilize slower hard drive technology.

We're waiting to get the MacBook in our labs, and as soon as we do we will be testing them thoroughly.

Price

There are many Mac users for whom the MacBook will not be ideal. This is not a powerful computer and it is no replacement for the MacBook Pro. Nor is it necessarily a replacement for a MacBook Air while it is possible to upgrade to faster MacBook Air models for a lot less money.

The MacBook does have some points in its favour. It is 160g lighter than the MacBook, smaller (even than the 11in MacBook Air) and thinner, so if you are carrying it around in your bag that might be a relevant factor in your decision. The other big difference is that the MacBook ships with just 8GB RAM while the MacBook Air ships with 4GB RAM, but you can always upgrade that at point of purchase.

Whether the tradeoff of weight and size is significant to you will depend a lot on what you will be doing with the MacBook. If the majority of what you do on your Mac is everyday tasks, such as sending and receiving email, browsing the web, and using office applications, the MacBook should be quite capable of meeting your needs. If you're expecting to edit movies using Final Cut Pro we don't expect this Mac to cut the mustard.

Prices

The 256GB, 1.1GHz MacBook will cost £1,049
The 512GB, 1.2GHz MacBook will cost £1,299

MacBook Air

APPLE'S THINNEST, LIGHTEST LAPTOP

There are four standard MacBook Air models available, in two sizes. In March 2015, each MacBook Air was updated and now offers a 1.6GHz dual-core Intel Core i5 processor, 4GB of RAM and Intel HD Graphics 6000 as standard.

There are also build-to-order options that let you add a faster Intel processor (the 2.2GHz dual-core i7, for £130), more storage (512GB SSD for £240) and 8GB of RAM (for £80).

The only real differences between the different models are the size of the screen, the amount of storage and battery life. Both the 11in and 13in MacBook Air offer either 128GB or 256GB SSD options. The 11in MacBook Air offers nine hours of battery life, compared with the 12 hours of the 13in MacBook Air. The 11in MacBook Air weighs 1.08kg and its dimensions are 30x19.2cm. The 13in MacBook Air weighs 1.35kg and its dimensions are 32.5x22.7cm. Both models are just 1.7cm thin at the edge and taper to 3mm at the front.

Because of its smaller screen, the 11in MacBook Air offers fewer pixels than the 13in model – up to 1366x768 at a 16:9 aspect ratio, compared with 1440x900 at a 16:10 aspect ratio on the 13in. That display doesn't come close to what you get from the 13in MacBook Pro Retina model, though – that Pro offers 2560x1600 Retina resolution at 227 pixels per inch.

The two Airs have different aspect ratios. The 11in model is the only Mac with a 16:9 ratio – the same as a widescreen TV. Some people find the narrower screen more restrictive. The MacBook Air doesn't have a great many

ports – that's the trade-off required for such a remarkably thin computer. There's no ethernet port, for example, so if you want to plug it into a wired network at work or on holiday, you'll need to buy an adaptor. However, the MacBook Air does offer built-in 802.11ac Wi-Fi, so it's unlikely that in today's wireless world you will ever need to plug it into a network anyway.

The MacBook Air also lacks an optical drive – the only Mac still to feature a CD/DVD drive is the MacBook Pro (the non-Retina model). We don't find we have much use for an optical drive these days, but if you really think you need one there is always the option of purchasing Apple's USB SuperDrive for £65.

There are two USB 3 ports, and you can also connect accessories (including external storage and monitors) to your MacBook Air via its Thunderbolt port, Apple's high-speed connector. Thunderbolt 1 is slightly slower than the Thunderbolt 2 ports on the Retina MacBook Pro, but still faster than USB 3 (20Gb/s for Thunderbolt 2, compared with 10Gb/s for Thunderbolt 1 and 5Gb/s for USB 3). The 13in

MacBook Air comes with an SDXC card slot, but the 11in model doesn't.

Speed

The MacBook Air is one of the slowest Macs around – along with the £899 iMac and the £399 Mac mini. However, one of the MacBook Air benefits is its solid state drive (sometimes referred to as flash), which speeds up operation. Flash memory is superior to a hard drive because it is faster at reading data and the 13in drive is even faster than the 11in. This makes a huge difference when running your Mac: opening documents, starting applications and even booting up all happen much faster.

Whether all that matters to you depends a lot on what you will be doing with your computer. If the majority of what you do on your Mac is everyday tasks, such as sending and receiving email, browsing the web and using office applications, then the MacBook Air is quite capable of meeting your needs. You can also happily use it for editing short videos or working with photos.

Price

There are four standard versions of the MacBook Air available and various build-to-order options that you can add on a point of purchase.

Prices

11in MacBook Air 1.6GHz (128GB) £749
11in MacBook Air 1.6GHz (256GB) £899
13in MacBook Air 1.6GHz (128GB) £849
13in MacBook Air 1.6GHz (256GB) £999

Build-to-order options

2.2GHz dual-core Intel i7 £130
8GB RAM £80
512GB flash storage £240

We recommend that you purchase the extra RAM when you buy the MacBook Air as it cannot be upgraded later. If you feel you need more storage, you could buy an external hard drive or an NAS drive to store content on and back things up when necessary.



MacBook Pro

A SUPERIOR MAC LAPTOP WITH A DISPLAY TO MATCH

There are five standard Retina MacBook Pro models available, in two sizes, as well as a non-Retina MacBook Pro, which we will cover at the bottom of this page. In March 2015, Apple updated the 13in models, and in May 2015 it updated the 15in models.

The key selling point is the Retina display, so called because it delivers maximum optical quality – the human eye is unable to distinguish any more pixels. That makes a Retina display about as precise as you can get, ideal for creative work.

The 13in model offers 2560x1600 Retina resolution at 227 pixels per inch, while the 15in model offers 2880x1800 resolution at 220 pixels per inch.

Unlike the MacBook Air range, the five Retina MacBook Pro models are substantially different in terms of spec, with the 15in models being equipped with quad-core i7 chips (2.2GHz or 2.5GHz), 16GB of RAM and more. The three new 13in Retina MacBook Pro units offer a dual-core Intel Core i5 processor (2.7GHz on two models, and 2.9GHz on the high-end version), 8GB of RAM, and Intel Iris graphics as standard.

The 13in models are available with 128GB, 256GB or 512GB flash storage, while the 15in models skip the 128GB version, offering only 256GB or 512GB.

There are various build-to-order options for the 13in models that allow you to add a faster Intel processor (a 3.1GHz dual-core i7, for £170), more storage (1TB SSD for £400) and 16GB of RAM (for £160).

The build-to-order options available for the 15in models include a faster 2.8GHz quad-core i7 Intel processor for £150, and 1TB storage for £400. It's worth remembering that the 2.8GHz clock speed of i7 Intel upgrade doesn't mean that the chip is slower than the 3.1GHz dual-core processor offered with the 13in MacBook Pro Retina model: it's an i7 and it's a quad-core, so it will be faster.

One of the key distinctions between the MacBook Air range and the MacBook Pro Retina models is battery life. The 11in MacBook Air offers nine hours of battery power and the 13in MacBook Air offers 12 hours. This compares with nine hours for the 13in MacBook Pro Retina, and nine hours for the 15in Retina model.

The other significant difference between Apple's laptop ranges lies in their weight and dimensions. The 13in Retina MacBook weighs 1.57kg, compared with the 1.35kg of the 13in MacBook Air. However, the dimensions of the 13in Retina MacBook are 31.4x21.9cm compared with 32.5x22.7cm for the MacBook Air – so the 13in Air is a slightly larger unit.

The 13in MacBook Pro isn't very much thicker than the MacBook Air either, measuring 1.8cm, while the Air is just a centimetre thinner,



measuring 1.7cm at its thickest point (though it slims to 3mm at the front edge). The 15in MacBook Pro with Retina display measures 35.9x24.7cm and weighs 2.02kg. It's the same thickness as the 13in model at 1.8cm.

The MacBook Pro with Retina display has a few more ports on offer than the MacBook Air. Like the MacBook Air, the MacBook Pro Retina doesn't feature an ethernet port, but it does have built-in 802.11ac Wi-Fi, and if you need to plug into a wired network you will be able to buy an adaptor separately.

There are two USB 3 ports, but you can also connect accessories (including external storage and monitors) to your Retina MacBook Pro via the two Thunderbolt 2 ports (that's one more than on the MacBook Air, which uses the slower Thunderbolt 1). Thunderbolt is Apple's high-speed connector, which is faster than USB 3 (20Gb/s compared with 5Gb/s). You can buy various adaptors that let you plug FireWire 800 hardware, for example, into this port.

You will also find an HDMI port (for plugging into your TV) and a SDXC card slot (for your camera's memory stick) on both Retina MacBook Pro models.

If you are looking for a Mac capable of playing a DVD or CD, then you may want to look at the MacBook Pro without Retina display (see below), or buy a £65 SuperDrive separately. The new 13in MacBook Pro models come with Apple's ForceTouch trackpad, which will change the way you interact with your Mac.

Speed

The 13in MacBook Pro Retina is faster than the MacBook Air, so if it's the fastest 13in MacBook you want then it's worth spending a little more on the Retina display model.

However, if you want the fastest Retina MacBook Pro, you really need to look at the 15in models. The 13in models have a dual-core processor, while the 15in models have a quad-core processor, and right up at the top of the range the 15in MacBook Pro with Retina display features a Core i7 2.5GHz processor.

Price

There are five standard versions of the Retina MacBook Pro plus a range of build-to-order options that you can add on to your unit at the time that you purchase it. You can also purchase the MacBook Pro without Retina display, but we will deal with that unit separately, below.

Prices

13in Retina MacBook Pro 2.7GHz i5 (128GB)	£999
13in Retina MacBook Pro 2.7GHz i5 (256GB)	£1,199
13in Retina MacBook Pro 2.9GHz i5 (512GB)	£1,399
15in Retina MacBook Pro 2.2GHz i7 (256GB)	£1,599
15in Retina MacBook Pro 2.5GHz i7 (512GB)	£1,999

Build-to-order options

13in Retina MacBook Pro

3.1GHz dual-core Intel i7 £170

16GB RAM £160

1TB flash storage £400

15in Retina MacBook Pro

2.8GHz quad-core Intel i7 £150

1TB flash storage £400

If you think that you might need the extra RAM in your 13in Retina MacBook Pro, then we recommend that you purchase the extra RAM when you buy the Mac as it cannot be upgraded subsequently. If you feel you need more storage, you could buy an external hard drive or an NAS drive to store content on and back things up when necessary.

Non-Retina MacBook Pro

As we mentioned at the start, the non-Retina MacBook Pro is the only Mac to offer an optical drive; it is also the only Apple laptop to still use a hard drive. The non-Retina MacBook Pro hasn't been updated since 2012 and many have been predicting its demise. That it still lives on is testament to the fact that there are people out there who want a Mac with a CD/DVD drive and a big hard drive. It offers a 2.5GHz dual-core Intel Core i5 processor, 4GB of RAM, a 500GB hard drive, and costs £899.

Mac mini

A TINY DESKTOP THAT'S APPLE'S CHEAPEST MAC

Two years after Apple last updated the Mac mini, it revamped its entry-level Mac and lowered prices. That October 2014 revamp resulted in three models of Mac mini.

The cheapest of the three Mac mini models has the same 1.4GHz dual-core processor and integrated graphics chip to be found on the MacBook Air and the entry-level iMac, so it's no surprise that the new Mac mini's processor and graphics performance is close to that of the current MacBook Air range and practically identical to the new £899 iMac. The MacBook Air has the edge due to its flash storage, while the Mac mini and iMac still feature a hard drive as standard.

The other two Mac minis offer Intel dual-core i5 2.6GHz and 2.8GHz processors with Intel Iris graphics. These chips are comparable to the processors inside the 13in Retina MacBook Pro, but, as with the MacBook Air, you can expect their faster flash storage to give these models a performance boost.

The Mac mini offers Intel i5 dual-core processor options as standard. There are i7 processors available at point of sale, but these are still only dual-core. Apple's previous generation of Mac mini models offered better, quad-core processors.

You can get a 2TB Fusion Drive for an extra £80 when you buy the £799 Mac mini, taking the price to £879. Only the top-of-the-range model offers this option.

The 2012 Mac mini server version offered a 2TB hard drive, which made it a popular choice among those looking for a media server, so Apple's decision to offer this 2TB Fusion Drive is probably a reaction to this.

The Mac mini weighs 1.22kg and its dimensions are 19.7x19.7cm. Its height is just 3.6cm.

The Mac mini's HDMI port makes it very popular for those wishing to set up a Mac media centre in their living room. This is despite the fact that the Mac mini lacks an optical drive – the only Mac that still features one is the MacBook Pro (the non-Retina model). There's not much call for an optical drive these days, but if you really think you need one there is always the option of purchasing Apple's USB SuperDrive for £65.

You will also find four USB 3 ports, an SDXC card slot, two Thunderbolt 2 ports and an IR receiver. The Mac mini used to offer a FireWire 800 port, which will be important to those who have previously made big investments in FireWire peripherals, although you could purchase a Thunderbolt to FireWire adaptor and continue to use your FireWire devices (there are two Thunderbolt 2 ports on the Mac mini, offering a throughput of 20Gb/s). The only Mac that still offers FireWire is the non-Retina MacBook Pro.

Another reason why the Mac mini has been a popular choice was the ease with which it could be upgraded. RAM, for example, could be slotted simply into place – unheard of in the majority of current Macs. Unfortunately this is no longer an option with the latest models, and you have to add extra RAM at the point of purchase if you think you will need it.

In the past the Mac mini has been pressed into service as a graphic designer's workstation, a home media centre for the family and even a web server for hosting entire commercial websites. However, the latest changes make this model more suited for consumers looking for the cheapest Mac available.

Speed

The Mac mini is not one of Apple's fastest Macs. The processor is comparable to the MacBook Air's, but the mini is scuppered by its slower hard drive. However, you could upgrade your Mac mini to a Fusion Drive for another £200, bringing the benefit of a faster flash drive combined with 1TB of standard storage. It's a setup that could deliver you a surprisingly speedy Mac for just £599.

The big disappointment with the current range of Mac mini models is that they lack the processor performance of the



previous models, first introduced in 2012. The October 2014 update saw the departure of quad-core processor options, for example. In our Geekbench tests we saw a very small increase in single-core mode, but the new top-of-the-range model scores just 56% of the older top-of-the-range model's speed when it came to multi-threaded applications. At least in terms of graphics processing the new Mac minis take the upper hand, benefiting from newer integrated graphics chips.

Price

There are three Mac minis available, with a few build-to-order options that you can add on at point of purchase.

Prices

Mac mini 1.4GHz dual-core i5 (500GB) £399
Mac mini 2.6GHz dual-core i7 (1TB) £569
Mac mini 2.8GHz dual-core i7 (1TB Fusion drive) £799

Build-to-order options

3GHz dual-core Intel i7 £160
16GB RAM £160
1TB Fusion Drive £160
256GB SSD £160
512GB SSD £240

If you think you might need the extra RAM we recommend you purchase it when you buy the Mac mini. It used to be possible to upgrade the RAM in a Mac mini but this is no longer possible as it is now soldered on. We would recommend the Fusion Drive option as the SSD part of the storage will speed things up considerably, while the extra capacity of the drive is likely to come in handy. If you are setting the Mac mini up as a home media centre you may want an optical drive, but you can always purchase a SuperDrive for £65, and continue to play DVDs and CDs that way.



iMac

APPLE'S SUPER-THIN, ALL-IN-ONE DESKTOP COMPUTER

You may think the iMac was only recently updated, with a new 5K Retina iMac joining the one introduced in October 2014. However, the rest of the iMac range, with the exception of the £899 model introduced in June 2014, has not been updated since September 2013. The iMac line-up includes three 21.5in versions, one 27in model and two Retina 27in systems.

The £899 entry-level 21.5in iMac has a 1.4GHz dual-core i5 chip, 8GB of RAM and a 500GB hard drive. Next up is an iMac that for another £150 gives you a faster 2.7GHz i5, 8GB of RAM and a 1TB hard drive. For another £150, the top-of-the-range 21.5in iMac offers a 2.9GHz i5, 8GB of RAM and a 1TB hard drive.

All the 27in iMacs also offer quad-core i5 chips, which will deliver more power than the smaller iMacs. The entry-level 27in iMac has a 3.2GHz quad-core i5 processor, 8GB of RAM and a 1TB hard drive, but lacks a Retina display.

There are two 27in Retina models. The original offers a 3.5GHz quad-core i5 processor with 8GB of RAM as standard (you can add 16GB or 32GB of RAM and a 4GHz quad-core i7 at point of purchase for a price), plus a Fusion Drive as standard. It will cost you £1,849. There's now a new £1,599 model with 3.3GHz processor. The Retina iMacs use AMD Graphics, while the non-Retina 27in uses nVidia.

You may be wondering why the iMacs don't yet feature SSD flash drives (with the exception of the Fusion Drive in the top of the range Retina iMac). So are we. Luckily, there are various build-to-order options which allow you to add Fusion Drives and flash storage, as well as up to 16GB of RAM, and faster processors (3.1GHz dual-core i7, for £160 on the 21.5in; 4GHz quad-core i7 for £200 on the flagship. Flash storage options include 256GB SSD for £160, 512GB SSD for £400, and a Fusion Drive (which combines flash storage with a hard drive) for £160. The Fusion Drive is a great solution, allowing you to benefit from more storage capacity and a faster experience.

The only upgrade options on the entry-level £899 iMac are the Fusion Drive (£200) and other SSD options.

The graphics cards are another differentiator between the different iMacs. The £899 model features the Intel HD 500 found in the MacBook Air, the next model up has an Intel Iris Pro, while the top-of-the-range 21.5in iMac features the nVidia GeForce GT 750M. The non-Retina 27in model offers the nVidia GeForce GT 755M.

The specs of the 21.5in iMacs are now below the MacBook Air and MacBook Pro, so it may be worth the laptops for power. Obviously the need for portability may play a big part in a choice between the two, though. Remember that if you choose a laptop, you can always plug it into your screen when you are at your desk.



Wondering how much space it will take up on your desk? The 21.5in iMac measures 52.8x45cm. The 27in iMac dimensions are 65x51.6cm. The screen is just 5mm thick. The base of the stand is 17.5cm deep on the 21.5in and 20.3cm on the 27in. The iMacs weigh 5.68kg or 9.54kg, so we don't recommend carrying them around.

The iMac offers an SDXC slot, USB slots, Thunderbolt 1 ports, 802.11ac Wi-Fi and ethernet. The Retina iMacs are the only ones with Thunderbolt 2.

There is no optical drive. Apple traded in the built-in SuperDrive when it slimmed down the monitor to a superthin 5mm. If you really think you need one, you can always buy Apple's USB SuperDrive for £65.

Speed

The flagship Retina iMac is one Apple's fastest Macs, and comparable to the Mac Pro. In fact, we would prefer the Retina iMac thanks to its gorgeous 5K Retina display (an equivalent display would cost around £1,500 extra for the Mac Pro).

Among the 2013 models still available, it is likely that it is the hard drive that slows down this generation of iMacs, so if you add a Fusion Drive you will be giving your iMac a huge boost.

The entry-level £899 iMac is one of the slowest Macs around. Those purchasing one should upgrade it with a £200 Fusion Drive – which combines an SSD with a hard drive – as this will make a much bigger impact than spending £150 to get the 2.7GHz iMac.

There is also quite a leap from the 21.5in iMac models to the 27in models. This isn't surprising as the 27in iMacs are aimed at the power user, and have a price to match.

Price

There are six iMac models available, with a few build-to-order options that you can add on at point of purchase. Our top iMac recommendation is that you buy a Fusion drive or an SSD as a build-to-order option. The iMac line-up is let down by the hard drives they are equipped with as standard.

It's also worth updating a 21.5in model at the same time as you purchase one so that it takes 16GB of RAM rather than the 8GB supplied as standard – it's not possible to update the RAM at a later date. However, the 8GB of soldered-on RAM on the entry-level 1.4GHz iMac cannot be upgraded at all, even at point of purchase. Accordingly we recommend the Fusion Drive option as it will speed up performance.

Prices

21.5in iMac 1.4GHz (500GB) £899
21.5in iMac 2.7GHz (1TB) £1,049
21.5in iMac 2.9GHz (1TB) £1,199
27in iMac 3.2GHz (1TB) £1,449
27in iMac Retina 3.5GHz (1TB) £1,599
27in iMac Retina 3.5GHz (1TB Fusion drive) £1,849

Build-to-order options

3.1GHz quad-core Intel Core i7 £160 (21.5in only)
3.5GHz quad-core Intel Core i7 £190 (27in only)
4GHz quad-core Intel Core i7 £200 (Retina iMac only)
16GB RAM £160
32GB RAM £480 (27in only)
3TB hard drive £120 (27in only)
1TB Fusion Drive £160
3TB Fusion Drive £280 (27in only)
256GB SSD £160
512GB SSD £400
1TB SSD £800 £640 (3.5GHz Retina)

Mac Pro

APPLE'S PROFESSIONAL WORKSTATION

Having neglected the Mac Pro for a few years, Apple eventually updated the line-up at the end of 2013. That leaves us with two standard Mac Pro models – a quad-core 3.7GHz Intel Xeon E5 (£2,499) and a six-core 3.5GHz Intel Xeon E5 (£3,299).

As well as sporting more cores and a different processor, the top-of-the range Mac Pro also features 16GB of RAM (rather than 12GB) and faster graphics cards – the Dual AMD FirePro D500 with 3GB of GDDR5 VRAM each (rather than the Dual AMD FirePro D300 with 2GB GDDR5 of VRAM). These are dual graphics cards, one of the selling points of the Mac Pro.

Apple claims that with the additional power, users will be able to “seamlessly edit full-resolution 4K video while simultaneously rendering effects in the background – and still have enough power to connect up to three high-resolution 4K displays”.

Both standard units also feature 256GB flash storage, with build-to-order options for 512GB or 1TB of flash storage.

Those buying the Mac Pro will be choosing from the various build-to-order options, of which there are many. Choices include a 12-core 2.7GHz processor, 64GB of RAM, a 1TB flash drive, and the Dual AMD FirePro D700 GPUs with 6GB of GDDR5 VRAM. If you were to build the ultimate Mac Pro, it would cost £7,299.

Wondering how much space the Mac Pro will take up on your desk? The Mac Pro has a diameter of 16.7cm and is 25.1cm tall. It weighs 5kg, a fraction less than the 21.5in iMac. The old aluminium Mac Pro is a giant in comparison.

The Mac Pro offers six Thunderbolt 2 ports – that's enough to drive three 4K displays or six Thunderbolt displays, if you wanted to. You'll also find dual gigabit ethernet – two ethernet controllers, each connected to its own lane, ensuring that there is enough bandwidth to operate at full speed. As you would

expect, the Mac Pro also offers 802.11ac Wi-Fi.

There is no FireWire port on the Mac Pro, but you can get a Thunderbolt to FireWire adaptor. There are four USB 3 ports, as with the Mac mini and iMac.

The Mac Pro lacks an optical drive. Most people probably have little use for an optical drive these days, but if you really think you need one, then there is always the option of purchasing Apple's USB SuperDrive for £65.

Speed

As you would expect from Apple's flagship Mac, the Mac Pro is fast. However, the year-old 27in iMac and the top-of-the-range 15in MacBook Pro aren't that far behind the entry-level Mac Pro. And if you bump up your iMac when you buy it with build-to-order options you can get a Mac for your money that rivals even the six-core Mac Pro model.

But there is more to the Mac Pro than the speed and many users will be attracted by many of its advanced technologies, such as the dual GPUs, the powerful multicore processors, the Thunderbolt 2 ports, and the superfast flash storage. For many, the build-to-order options will let them build a professional and powerful workstation capable of doing things iMac users can only dream of.

Yet there is something to be said for the iMac with 5K Retina display. The standard 5K iMac features an incredible screen, backed by a 3.5GHz quad-core Intel i5 CPU, 8GB of RAM, 1TB Fusion drive and AMD Radeon R9 M290X GPU for £1,999. Build-to-order options include a 4GHz i7 (£200), and upgrading the GPU to an AMD Radeon R9 M295X for £200. If you added these two features to the iMac, you would pay £2,399, which is still less than the Mac Pro and includes a 5K display; an equivalent Dell display costs just under £2,000.

Price

There are two Mac Pro models available, with a number of build-to-order options that you can add on at the point of purchase.



Configuring the ultimate Mac Pro will cost you a cool £7,779. If you have any cash left over, then you could add a Sharp 32in 4K monitor to that for another £2,999. Or why not go the whole hog and add three Sharp 4K monitors, setting you back £16,776. That would be some Mac setup.

If you have the cash, we would recommend the six-core Mac Pro over the quad-core, but even better, add as many build-to-order options as you can afford.

Prices

Mac Pro 3.7GHz (quad-core) £2,499
Mac Pro 3.5GHz (six-core) £3,299

Build-to-order options

3.5GHz six-core with 12MB of L3 cache £400 (quad-core only)
3GHz eight-core with 25MB of L3 cache £1,600/£1,200
2.7GHz 12-core with 30MB of L3 cache £2,800/£2,400
16GB RAM £80 (quad-core only)
32GB RAM £400/£320
64GB RAM £1,040/£960
512GB SSD £240
1TB SSD £640
Dual AMD FirePro D500 GPUs with 3GB GDDR5 VRAM £320 (quad-core only)
Dual AMD FirePro D700 GPUs with 6GB GDDR5 VRAM £800/£480



Which Mac?

HOW TO CHOOSE THE MAC THAT WILL SUIT YOU

With so many Macs to choose from, each with very different features and specs, it can get a little tricky when it comes to deciding which Mac to buy. How do you know which Mac is best for you? Should you buy a Mac mini, an iMac or a Mac Pro? Or would you be better off with a MacBook, MacBook Air or a Retina MacBook Pro? Which Mac is best for you really depends on your needs and how much you are prepared to spend to meet them.

As a rule Macs are more expensive than PCs, but that's really because there are more low-cost PCs available. If you want a laptop that costs less than £300, then you will have to settle on a PC (or find yourself a second-hand Mac). However, we think it's worth spending a little more to get a lower-priced Mac, rather than saving a few pounds buying a budget PC.

If you want to spend as little as possible on your new Mac, you have a few choices. The Mac mini is an obvious one, with the price starting at £399, but you will need to factor in the cost of a display as well as a mouse and keyboard if you don't already have those peripherals.

An alternative might be the £799 11in MacBook Air, which is a neat little laptop, although you may end up buying a separate display to plug into when sitting at your desk.

If you are happy to spend a little more on a reasonably priced Mac laptop, then you might like the 13in MacBook Air or the 13in MacBook Pro with Retina display. These models start at

£849 for the Air, and £999 for the Pro, with the Pro version bringing a faster

processor and more RAM as well as that gorgeous Retina display. The one thing in favour of the Air is the longer battery life (12 hours as opposed to nine). There is also the weight difference, but it's quite minor really – the Pro is 1.57kg, while the Air weighs 1.08kg. There's is now the added option of the new MacBook. Weighing in at 920g, it's lighter than any other Mac laptop, though, also less powerful. It's priced at £1,049 and £1,299.

If it's a reasonably priced desktop you are after, then the £899 iMac might look like a good option, but you should note that the specs in that machine are pretty similar to those in the £399 Mac mini. With that in mind, it might be better to spend a little more to get one of the other two 21.5in iMacs, although both of those cost more than £1,000.

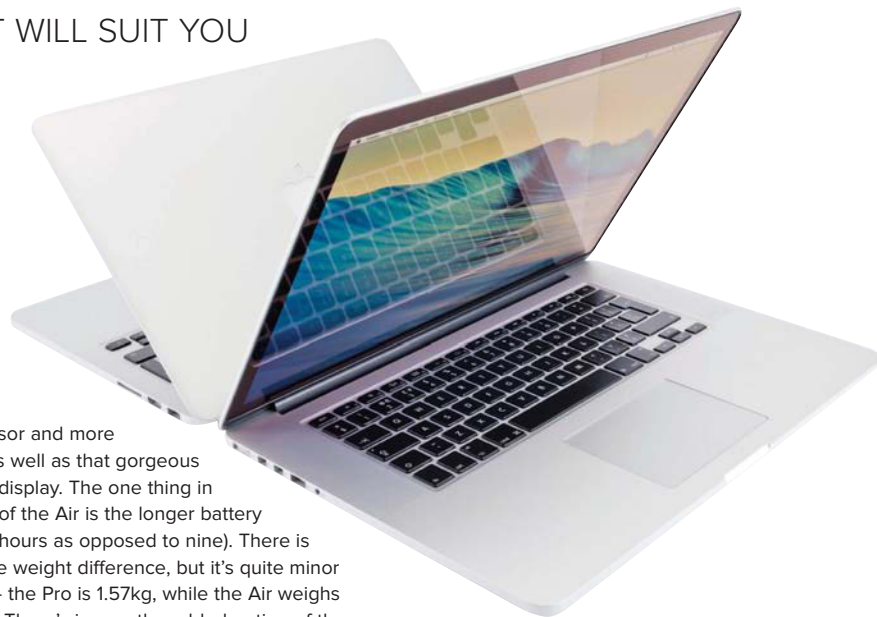
Another option would be to get a build-to-order version of the iMac with a Fusion drive, which will bring a faster flash drive into the equation for an extra £200. That would bring the price of your iMac to £1,099, or if you did the same with the Mac mini, £599. In both cases we've found the Fusion drive a better option than the next model up in the same range, because the additional flash memory will speed up the Mac more than another model still restricted by a standard hard drive.

But what if you are prepared to spend a little more to get a decent Mac laptop? In that case we'd

recommend the 15in Retina MacBook Pro. It costs £1,599 but comes with a decent quad-core Intel Core i7 processor as well as 16GB of memory. It also comes with 256GB of flash storage; if you think you need more you can get 512GB for £1,999, but we'd probably go for an external hard drive if we needed extra space.

If you want to spend a little more to get a decent Mac desktop, then the 27in iMac is a great option. Prices start at £1,499 and you get a decent quad-core Intel Core i5 processor. The only thing that lets the iMac down compared to the MacBook Pro is the slower hard drive that comes as standard, and the 8GB of RAM. Both of these factors can be rectified when you buy the Mac, as you can take up the 16GB of RAM option for an additional £160, and a Fusion drive or 265GB flash storage for another £160. That would bring the price of your iMac to £1,769.

If it's a top-of-the-range Mac you want, then you have two choices: the 27in Retina 5K display iMac, which costs £1,999; or the Mac Pro, Apple's workstation-class Mac, which features a Xeon E5 processor, 12GB of RAM, dual AMD graphics cards and 256GB of flash storage, with prices starting at £2,499. The Retina iMac comes with a Fusion drive, 8GB of RAM, and a superfast Intel quad-core i5 processor. That's a difference of £500, although with the iMac you gain the gorgeous display; to get a similar 5K display, such as Dell's UltraSharp 27 Ultra HD, to use with your Mac Pro would set you back £1,762. We'd be inclined to recommend the iMac in this case.



iPhone 6 Plus

APPLE'S BIGGEST PHONE, THE IPHONE PHABLET

When Apple introduced the iPhone 5 in 2012, it described it as the perfect size for a smartphone – you could hold it comfortably in one hand while reaching all four corners with the thumb of that hand. Apple might have been convinced back then that a 4in screen was perfect, but in the years that followed alternative smartphones arrived in sizes that dwarfed the iPhone 5. By 2014 the iPhone was one of the smallest smartphones available; it seemed that people didn't really mind that much if they couldn't reach the corner with their thumb.

Apple launched its first entry into the phablet category in September 2014. The iPhone 6 Plus is Apple's biggest ever iPhone with a screen

that measures a whopping 5.5in (diagonally) and offers 1920x1080 resolution at 401 pixels per inch. Phablet is the term used to describe a large phone that is almost a tablet. The popularity of phablets is thought by some to be causing a decline in interest in tablets themselves, as people turn to large phones that have good-sized screens and bring the advantage of operating as a mobile phone.

The iPhone 6 Plus is available in silver, gold or space grey, and measures 158.1mm tall by 77.8mm wide, is a mere 7.1mm thick and 172g in weight. Apple addressed its concerns about users' comfort when holding such a big phone: the iPhone 6 Plus comes with a Reachability feature, which at a double-tap on the home button brings the top of the screen down so you can reach the controls.

The iPhone 6 Plus features Apple's A8 chip and the M8 motion co-processor. The motion co-processor chip is used to collect sensor data – it's a clever way to save battery life as it bypasses the processor. A barometer is also included inside the iPhone 6 Plus.

The iPhone 6 Plus offers Touch ID, and like the iPhone 6, NFC, which is a necessary technology if you intend to use Apple Pay (not yet launched in the UK).

There is also a new 8Mp iSight camera on the back with focus pixels and an f/2.2 aperture (also shared with the iPhone 6). The iPhone 6 Plus camera is the only Apple iPhone to offer optical image stabilisation, which makes for better pictures in low light. The iPhone 6 Plus shares many of its other camera features with the iPhone 6, including 43Mp panorama and the option of recording HD video at 60fps and slo-mo video at 120fps or 240fps. You also get cinematic video stabilisation and continuous autofocus video in both iPhone 6 models. Another feature offered only by the iPhone 6 and 6 Plus is 802.11ac Wi-Fi (other iPhones only go as high as 802.11n).

Perhaps the biggest deal for those looking to purchase a new phone is battery life. Apple says that the iPhone 6 Plus battery life gives up to 24 hours of talk time on 3G; up to 16 days/384 hours on standby; up to 12 hours of internet use on 3G, up to 12 hours on LTE, and up to 11 hours on Wi-Fi; up to 14 hours of video playback; and up to 80 hours of audio playback.

By contrast, Apple says that the iPhone 6's battery life gives up to 14 hours of talk time on 3G; up to 10 hours of internet use on 3G, up to

10 hours on LTE, and up to 11 hours on Wi-Fi; up to 11 hours of video playback; and up to 50 hours of audio playback.

So the iPhone 6 Plus gives you the most battery life you can get from an iPhone. This is no real surprise, as the iPhone 6 Plus's battery is listed at 2915mAh at 3.82 volts, which is substantially larger than the iPhone 6's 1810mAh battery.

Speed

The iPhone 6 and iPhone 6 Plus are powered by the same A8 processor, but at different clock speeds. The iPhone 6 Plus runs at 1.39GHz compared with the iPhone 6's 1.2GHz.

For that reason, the iPhone 6 Plus is faster than the iPhone 6. When we ran Geekbench the iPhone 6 Plus scored 1,626 (single-core) and 2,917 (multicore), while the iPhone 6 scored 1,517 (single-core) and 2,586 (multicore).

Graphics performance is also good, but we've yet to notice any real difference between the iPhone 6 Plus and the iPhone 5s, although as more graphics-heavy games appear you may be glad of the extra graphics prowess.

Price

The iPhone 6 Plus starts at £619. Each of the three models available costs £80 to £90 more than the equivalent capacity iPhone 6.

Prices

16GB iPhone 6 Plus £619
64GB iPhone 6 Plus £699
128GB iPhone 6 Plus £789

However, we'd advise against buying the 16GB entry-level version – you are likely to find it frustrating staying within 16GB, especially when Apple next updates its operating system (in 2014 the OS required as much as 5GB of space on some iPhones). The 64GB iPhone 6 Plus costs just £80 more for four times as much storage.



iPhone 6

THE 4.7IN SUCCESSOR TO THE IPHONE 5S

The iPhone 6 Plus wasn't the only larger iPhone to launch in 2014. The iPhone 6 was also introduced, with a screen that measures 4.7in (diagonally) and offers 1334x750 resolution at 326ppi.

This suggests that the iPhone 6 has the same pixel density as the iPhone 5s, but Apple has still dubbed its new screen 'Retina HD', presumably because it is counting the total number of pixels on display, rather than how close together they are. The iPhone 6 Plus offers a higher pixel density of 401ppi and is also described as Retina HD. Despite the similar sounding pixel count between the iPhone 6 and iPhone 5s, Apple has also made modifications to the newer screens' design, adding dual-domain pixels that allow for improved viewing angles, and other features that enhance the visibility of the display as well as a better contrast ratio (the contrast ratio on the iPhone 6 is in fact better than that on the iPhone 6 Plus).

iPhone 6 sports the same curvaceous design as the iPhone 6 Plus, albeit slightly smaller dimensions. It measures 138.1mm tall by 67mm wide, is just 6.9mm thick, and weighs 129g. It is available in silver, gold or space grey.

Although smaller than the iPhone 6 Plus, the iPhone 6 is still very large, and only the most gigantic hands would be able to comfortably reach to the edges in one-handed use. As a result Apple, also offers Reachability on the iPhone 6, which allows you to double-tap on the home button to pull the top of the screen down so you can reach the controls.

One major design change for the iPhone 6 and iPhone 6 Plus is the relocation of the on-off button. This was found at the top of the phone in previous generations, but now the button has moved to the side of the phone to make it easier to reach when you are holding it one-handed (the new home for this button does make taking screen shots harder, though).

Like the iPhone 6 Plus, the iPhone 6 features Apple's A8 chip and the M8 motion co-processor. The A8 is 50 percent more power-efficient than the A7, according to Apple.

A barometer is also included for measuring air pressure to determine your elevation (it can basically tell if you have been going upstairs). This is one of the new fitness and health features available to iPhone users. All iPhones also offer an accelerometer and gyroscope for the same purpose.

The iPhone 6 also offers Touch ID, and, as does the iPhone 6 Plus, NFC, which is a necessary enabling technology for using Apple Pay (not yet launched in the UK).

All of Apple's current iPhones offer an 8Mp camera. The iPhone 6 and iPhone 6 Plus camera still only offers 8Mp, but it gains focus pixels. Both iPhone 6 models and the iPhone 5s offer an f/2.2 aperture.

The iPhone 6 shares some other camera features with the iPhone 6 Plus. These include 43Mp panoramas, the option of recording HD video at 60fps and slo-mo video at 120fps or 240fps. There is also cinematic video stabilisation and continuous autofocus video. You will also find 802.11ac Wi-Fi in the iPhone 6, while the older models only go as high as 802.11n.

When it comes to battery life, Apple says that the iPhone 6 offers up to 14 hours of talk time on 3G; up to 10 hours of internet use on 3G, up to 10 hours on LTE, and up to 11 hours on Wi-Fi; up to 11 hours of video playback; and up to 50 hours of audio playback. You'll get more battery life from the iPhone 6 Plus, but the iPhone 6 battery is still better than those in the iPhone 5s and iPhone 5c, which both have identical battery life, according to Apple. The iPhone 5s/5c handsets offer up to 10 hours of talk time on 3G; up to eight hours of internet use on 3G, up to 10 hours on LTE, and up to 10 hours on Wi-Fi; up to 10 hours of video playback and up to 40 hours of audio playback.

Speed

Both the iPhone 6 and iPhone 6 Plus are powered by the same A8 processor, but it's running at different clock speeds. The iPhone 6 runs at 1.2GHz, while the iPhone 6 Plus runs at 1.39GHz, according to Geekbench.

When we ran Geekbench the iPhone 6 scored 1,517 (single-core) and 2,586 (multicore), while the iPhone 6 Plus scored 1,626 (single-core) and 2,917 (multicore).

Not surprisingly the iPhone 6 Plus is faster than the iPhone 6.



The iPhone 6 is faster than the iPhone 5s, though. The iPhone 5s scored 1,409 (single-core) and 2,549 (multicore).

Graphics performance is good, but you are unlikely to notice any real difference unless you are using really graphics-heavy games.

Price

The iPhone 6 starts at £539 – £10 less than the original starting price of the iPhone 5s when it launched in 2013.

Prices

16GB iPhone 6 £539
64GB iPhone 6 £619
128GB iPhone 6 £699

Each of these phones costs £80 to £90 less than the same-capacity iPhone 6 Plus.

As we mentioned previously, we'd advise against buying the 16GB version as you are likely to find it frustrating staying within that 16GB storage limit, especially when Apple next updates its operating system (which in 2014 required as much as 5GB of space on some iPhones). The 64GB iPhone 6 costs just £80 more and for that you get 300% more storage.



iPhone 5s

THE 4IN IPHONE WITH TOUCH ID

In 2013 Apple upgraded its existing iPhone platform, splitting the iPhone 5 into two in the process. It created the iPhone 5s, which features Touch ID to let you unlock your iPhone and pay for things on the App Store merely by touching your finger to the home button, and the more playful iPhone 5c, which comes in a range of colours. Both phones are still available from Apple, although the larger capacities are now discontinued. They remain good options for those looking for a cheaper iPhone.

The iPhone 5s screen measures 4in (diagonally) and offers 1136x640 resolution at 326ppi. Although this may suggest that the iPhone 5s has the same pixel density as the iPhone 6, the iPhone 6 has a greater number of pixels in total, not to mention a superior screen with better viewing angles and contrast ratio.

The iPhone 5s sports a different design to the iPhone 6 models and the iPhone 5c. The iPhone 5s is more angular, with sharper edges, while the other models have curved edges. It is the smallest and lightest iPhone, measuring 123.8mm tall by 58.6mm wide and just 7.6mm thick, and weighs 112g. Like the iPhone 6 models, the 5s is also available in silver, gold or space grey.

Both of the cameras on the iPhone 5s offer improvements when compared to the iPhone 5c. The camera on the back has bigger pixels, a bigger sensor, a new True Tone flash, and various other hardware and software features.

As far as the bigger pixels are concerned, larger pixels yield greater electrical output,

which produces clearer images in low-light conditions without any resort to messy noise-reduction techniques.

When Apple launched the iPhone 5s it was the first time that a smartphone manufacturer had opted to increase pixel size rather than pixel numbers. All iPhone cameras offer 8Mp – and this is sufficient. Cramming a load of pixels onto a sensor will not create a better image, it just means that the file size is bigger. The larger sensor and a bigger lens serve to let in more light, as does the faster aperture of f/2.2 instead of f/2.4. The faster f/2.2 aperture on the iPhone 5s really helps with indoor and dusky shooting. Both iPhone 6 models also offer a f/2.2 aperture.

The iPhone 5s lacks some of the camera features you'll find on the iPhone 6 Plus and iPhone 6, including 43Mp panoramas, the option of recording HD video at 60fps and slo-mo video at 120fps or 240fps. HD video and slo-mo features are all available on the iPhone 5s, but the quality is poorer. One other area where the iPhone 5s surpasses the iPhone 5c is the FaceTime camera, which offers auto HDR for photos.

Only the iPhone 6 models offer 802.11ac Wi-Fi. The older iPhone models only go as high as 802.11n.

When it comes to battery life, Apple says that the iPhone 5s offers up to 10 hours of talk time on 3G; up to eight hours of internet use on 3G, up to 10 hours on LTE, and up to 10 hours on Wi-Fi; up to 10 hours of video playback; and up to 40 hours of audio playback. You'll get more battery life from the newer, iPhone 6 models.

Speed

The iPhone 5s is powered by the A7 processor, which was first introduced with this phone in 2013, running at 1.3GHz, according to Geekbench. When the A7 chip launched it was a giant leap on its own account, offering a huge speed improvement thanks to its 64-bit capabilities.

When we ran Geekbench, the iPhone 5s scored 1,409 (single-core) and 2,549 (multicore). By comparison the iPhone 6 scored 1,517 (single-core) and 2,586 (multicore), while the iPhone 6 Plus scored 1,626 (single-core) and 2,917 (multicore). The Geekbench score of the iPhone 5s was more than twice that of the iPhone 5c.



When it comes to games and graphics capabilities, the GPU performance of the iPhone 5s is superior to that of the iPhone 5c; we saw some big differences using GFXBench 2.7's T-Tex C24Z16 1080p offscreen test. The iPhone 5s was able to push 25 frames per second, more than three and a half times the number of frames supported by the iPhone 5c. While these results are below the iPhone 6 and 6 Plus, it is unlikely you will really notice the extra unless you are playing the most power-hungry games.

Price

The iPhone 5s starts at £459, which is some £90 cheaper than the same model cost when it launched in 2013.

Prices

16GB iPhone 5s £459
34GB iPhone 5s £499

The iPhone 5s is the only iPhone available with a 34GB capacity. Apple removed the 34GB option from the line-up for its iPhone 6 models, which come only in 16GB, 64GB and 128GB versions.

But at just £40 more it's a no-brainer to buy the 34GB version of the iPhone 5s. We'd advise against the 16GB version, as you are likely to find it frustrating staying within that storage limit. When Apple updates its operating system it will take even more than the 5GB of space required on some iPhones by its 2014 update.



iPhone 5c

APPLE'S CHEAPEST, MOST COLOURFUL IPHONE

When the iPhone 5c launched in 2013 it disappointed some who were hoping for a low-cost smartphone from Apple. At launch the iPhone 5c cost £469 – only £80 less than the equivalent iPhone 5s. Months later the company introduced a 8GB version of the 5c for £429. Now that same 8GB version of the iPhone 5c costs £319, a saving of £110. The big question, though, is whether £319 now represents a good price for the iPhone 5c.

If you are determined to buy an iPhone but don't want to spend a lot, then the iPhone 5c might be worth considering. If price is your main concern, it's also worth looking around for a second-hand iPhone, or you may find you can get a good deal on a new handset from your mobile phone network. All the prices we quote are what Apple sells the iPhone for if you purchase it off-contract, allowing you to shop around for a monthly plan or pay-as-you-go contract that suits you (or perhaps you already have a great contract and don't want to lose it). It is also likely you will be able to find a contract with one of the UK mobile networks that will give you an iPhone 5c handset for free.

The main issue with the iPhone 5c is that it offers just 8GB of storage space; although we have heard of some mobile networks offering 16GB iPhone 5c models, Apple doesn't. You may find it hard to imagine that you will ever need a great deal of storage space, but it's worth considering that when the next version of the iPhone operating system is released

you may well find that you will need more space to install the update than you have available on your iPhone.

In this case, while the leap up to the iPhone 5s is not easy to recommend – because at £140 more it is quite a significant extra chunk of cash – it will still give you twice as much potentially precious storage as the 5c. The 5s also comes with various other features such as Touch ID, so you can unlock your iPhone and pay for things on the App Store merely by touching your finger to the home button.

Like the iPhone 5s, the iPhone 5c has a screen that measures 4in (diagonally) and offers 1136x640 resolution at 326ppi.

The design of the iPhone 5c is more reminiscent of the original iPhone than the iPhone 5s and iPhone 6 models. It has a smooth plastic case that comes in five different colours: green, blue, yellow, pink and white. It's a fraction larger and heavier than the iPhone 5s, measuring 124.4mm tall by 59.2mm wide and just 8.97mm thick, and weighs 132g (only the iPhone 6 Plus is heavier).

In many ways the iPhone 5c is the same phone as the iPhone 5 was when it launched in 2012. Aside from the new case, on the inside the iPhone 5c has the same rear-facing camera and processor. The FaceTime camera on the front of the iPhone 5c is better than the one found in the iPhone 5, however, offering better visibility in low-light. The iPhone 5c will take panoramas, but burst mode shooting is not



available, nor is slo-mo video (both are available on all other iPhone handsets).

When it comes to battery life, Apple says that the iPhone 5c offers exactly the same battery longevity as the iPhone 5s: up to 10 hours of talk time on 3G; up to eight hours of internet use on 3G, up to 10 hours on LTE, and up to 10 hours on Wi-Fi; up to 10 hours of video playback; and up to 40 hours of audio playback.

Speed

Although the iPhone 5c features the same A6 processor as the iPhone 5, in some of our tests it scored slightly worse than its predecessor. For example, the iPhone 5 was about 10 percent faster than the 5c in Geekbench tests. As for the iPhone 5s, that model's Geekbench score was more than twice that of the iPhone 5c. However, even these speeds will be more than enough for the average needs of a user.

The GPU performance of the iPhone 5c is also inferior to that of the iPhone 5s, with the latter achieving 25fps, more than 3.5 times more than the iPhone 5c. If you aren't playing games or editing video on your iPhone, though, it is unlikely that this will matter to you.

Price

The 8GB iPhone 5c costs £319. There is only an 8GB model available from Apple, so if you want 16GB or more then you will need to move up to the entry-level 16GB iPhone 5s. But as the 16GB iPhone 5s costs £140 more than the 5c at £459, if you are considering the iPhone 5s, then you might as well fork out another £40 and get the 32GB version of the iPhone 5s for £499.



iPad Air

APPLE'S FULL-SIZED iPad

The iPad is Apple's tablet computer. It's partway between an iPhone and a laptop, offering you the extra screen space, but using exactly the same operating system as the iPhone, so if you already own an iPhone it will feel familiar. There are millions of apps available for the iPad that allow you to do anything from producing spreadsheets and presentations, to playing games, creating photographic masterpieces or editing home videos.

Apple sells two models of iPad Air: the iPad Air 2, launched in October 2014, and the iPad Air, which arrived the previous October. When the first iPad Air launched in 2013 it was already incredibly thin, just 7.5mm, but the iPad Air 2 is even thinner, a mere 6.6mm.

The Air 2 also has an upgraded rear-facing camera (8Mp to the iPad Air 1's 5Mp). There are certain shooting conditions in which the iPad

Air 2 demonstrates its superiority – particularly close-up detail under studio lighting and in low-light conditions. The iPad Air 2 also gains some camera software features including slo-mo and time-lapse video modes, as well as burst mode and a timer. And panoramas: the iPad Air 1 already had these, but they can now go all the way up to 43Mp. We're always surprised that anyone would use the iPad as a camera – it is a rather inconvenient size, yet people often use one to take photos and videos, perhaps because of the size of the viewfinder.

Both iPad Air models offer Retina displays with a resolution of 2048x1536 and a pixel density of 264ppi. However, the iPad Air 2 adds an anti-reflective coating and, thanks to new manufacturing technologies, Apple has been able to remove the 'air gaps' between different elements of the screen, which effectively gives users more display clarity and makes it easier to see the screen from different angles – valuable if, for example, you're sitting next to someone and sharing the iPad screen to watch a movie.

The Air 2 also comes with a Touch ID fingerprint scanner built into the home button. Touch ID is convenient, enabling you to unlock your iPad, or an individual app, with a single touch of a finger rather than a passcode or password. As apps and websites integrate Apple Pay, you will be able to use Touch ID on your iPad to pay for things. However, you won't be able to use the iPad in the high street as it lacks the requisite NFC chip.

Other differences between the iPad Air 1 and 2 include a gold finish as an option for the newer model. The iPad Air 2 is available in silver, gold and space grey, while the iPad Air 1 is available only in silver or space grey. The grey model has a black rim around the screen, but all other iPads are white on the front.

Speed

The iPad Air 2 contains a new processor chip – the A8X, which is a souped-up version of the A8 that made its first appearance in the iPhone 6 and iPhone 6 Plus.

With its A8X processor chip, the iPad Air 2 is significantly quicker at general processing and handling graphical tasks than the iPad Air 1 (which has an A7 chip) – about 40 percent faster, on paper. But at this point that difference is more theoretical than practical. In our Geekbench tests the iPad Air 1 scored 1,468 (single) and 2,658 (multi), while the iPad Air 2 scored 1,818 (single) and 4,520 (multi).

In terms of graphics, Apple claims that iPad Air 2 users will see 2.5 times the graphics performance of the first iPad Air. That's great news for gamers, and video and photo-editing apps will also benefit from the enhanced graphics performance.

However, the iPad Air 1 can handle all current apps, and you're unlikely to see major speed gains with current software. Over time this may change but if all you do with your iPad is browse the web and read and write emails, then you are unlikely to notice any slowdown.

Price

The iPad Air 2 starts at £399 for the 16GB version. Next up is the 64GB model for just £80 more at £479, and the 128GB model costs £559.

The 16GB iPad Air 1 is just £80 cheaper than the entry-level iPad Air 2, at £319. Or you can pay another £40 and get the 32GB version for £359, which is still less than the price of a 16GB iPad Air 2. If Touch ID isn't important to you, you may prefer to pay less and get twice as much storage space.

When choosing which iPad to buy, there is also the decision of whether to get one that is capable of connecting to the mobile networks, rather than just Wi-Fi. The models that can use 3G and 4G in addition to Wi-Fi cost £100 more than the non-cellular models.



iPad mini

APPLE'S SMALLER IPAD

If the iPad Air is partway between an iPhone and a laptop, the iPad mini is partway between the iPhone 6 Plus and the iPad Air. It's a popular choice for those who want to read books. It also used to be popular because it was a lot lighter than Apple's full-sized iPad, but the difference in weight has since been scaled back: the iPad Air 2 weighs 437g while the iPad mini 3 weighs 331g. It's screen size that is the key difference between the iPad Air and iPad mini now, with the Air featuring a 9.7in Retina display and the mini a 7.9in display.

Apple sells three models of iPad mini. The iPad mini 3 was launched in October 2014, and is essentially the same as the iPad mini 2, which launched in October 2013. Apple also still sells the original iPad mini, which was launched in October 2012.

The main difference between the iPad mini 2 and 3 is the inclusion of Touch ID on the later model, and the option of a gold finish.

When Apple launched the newer iPad mini we were disappointed that it didn't also gain any of the features offered by the 2014 iPad Air. For that reason we generally advise saving £80 and purchasing the iPad mini 2 unless you really want Touch ID. The newer iPad costs £80 more than the previous year's model. For some, Touch ID may be worth the extra £80, but other than that there really is no other difference.

There is a much bigger difference between the iPad mini 1 and newer iPad mini models. You can still buy the 16GB original iPad mini for £199 – £70 less than what it sold for at launch (£269). This iPad lacks a Retina display, and is thicker (7.2mm compared with 7.5mm) and heavier (308g compared with 331g) than the other iPad mini models.

If all you need is a low-cost device for reading books or watching video when commuting, the iPad mini 1 might be adequate, although it's still worth paying just £40 more to get the iPad mini 2 – you'd be crazy not to.

All the iPad minis have the same rear and forward-facing cameras. The camera on the rear offers 5Mp photos while the front-facing camera – used predominantly for FaceTime video calling



– offers 1.2Mp. The only real difference between the iPad minis is that the newer models offer panorama shooting while the original iPad mini doesn't. The original iPad mini also lacks 3x video zoom.

All iPad minis have a battery life that gives up to 10 hours of web surfing, video or music on Wi-Fi, and nine hours over a mobile data network.

Speed

Another key difference between the original iPad mini and the newer iPad mini models is the fact that the earlier model features the A5 chip rather than the A7 and M7 motion co-processor combo. The A5 processor first appeared in the iPhone 4s, which should give you an idea of just how old that processor is now. It's a 32-bit system-on-a-chip that also powers the fifth-generation iPod touch and the Apple TV.

The iPad mini 2 and 3 both feature the A7 processor, which can also be found in the iPad Air 1. This is a 64-bit system-on-a-chip that first appeared in the iPhone 5s in 2013 and was the first 64-bit processor to ship in a consumer smartphone.

The A7 is around four times as fast for general processing and about eight times as fast for graphical processing. But these numbers are theoretical, and apply only in situations that exert a significant demand on the processor; on many simple apps the mini 1 will be fine.

As time goes by the most demanding tasks – extremely graphically ambitious 3D games, video and photo editing, and all the more processor-intensive apps that will be released in the next few years – will begin to tax the powers of the iPad mini 1.

Price

There's a £40 gap from the iPad mini 1 to the iPad mini 2, and then an £80 gap from the iPad mini 2 to the iPad mini 3. Priced so closely, it's a no-brainer to pay the extra £40 for the Retina display and better chip in the iPad mini 2. Although the £80 for the Touch ID is less attractive, you might prefer to spend £100 more and get a Wi-Fi and cellular version. Each model is available for Wi-Fi only, or you can add cellular capabilities for another £100, which will enable you to connect to a mobile phone network when you are out and about.



iPods

THE MP3 PLAYER THAT STARTED IT ALL

Apple sells three types of iPod: the iPod shuffle, the iPod nano and the iPod touch.

The iPod touch is far more than just a simple music player. It comes equipped with essentially all the features of a fully fledged iPhone bar the call capabilities. The iPod nano is also a capable device, and small enough to carry anywhere, while the iPod shuffle is simple, inexpensive and tough.

Apple quietly retired the original iPod classic in October 2014, after seven years of faithful service.

With the iPod classic now a distant memory, those wanting a large amount of storage on their iPod will find the options rather limiting. Currently, the iPod shuffle offers a humble 2GB of storage, while the iPod nano boasts a rather more spacious 16GB. It's worth bearing in mind that this means the shuffle can hold around 450 songs encoded at 128kb/s, with the nano's 16GB topping out at around the 4,000 mark. The only model to go higher than 16GB is the iPod touch, which is available in 16GB, 32GB and 64GB variants. While it's nowhere near the mammoth 160GB capacity of the iPod classic, it should still offer enough room for the vast majority of users.

The shuffle is probably the most true to that original iPod, as it focuses solely on playing audio. The lack of a screen has meant that in the past you had to remember what was on the device, and switching between tracks was something of a lottery. Now, thanks to the voiceover feature, the iPod shuffle will read out the name of the track, podcast, audiobook or playlist to you, and allow you to choose the one you want to listen to.

The most obvious feature that differentiates the iPod nano and the iPod shuffle is the nano's 2.5in multitouch display. This enables the iPod nano to have a range of included apps that broaden its appeal. Music is, of course, still the primary function, with the cool ability to create genius mixes on the fly by tapping a button while a song is playing; the device will then automatically generate a playlist from your library based on that track.

A screen also means video, with the iPod nano playing any media synced to it from your iTunes account.

The iPod touch is in a different category to its smaller siblings. As the only iPod to run a full version of iOS, the iPod touch has access to the full App Store, with all the games, productivity

tools, social media and camera apps that you'd expect to find on an iPhone, as well as web access. The built-in camera, while not quite up to the iPhone quality, still offers great shots.

iPods may not share the same always-on nature of smartphones, but battery life remains an important factor for any portable electronic device. You might think that the iPod shuffle would win this category due to its lack of a power-sapping screen, but its diminutive size means a small battery and it lasts for only 15 hours. It loses out to the nano, which goes for around 30 hours, while the iPod touch – which houses the largest battery in the range – holds out for a massive 40 hours of listening time. If you watch video, though, things immediately change, with the nano affording 3.5 hours and the touch falling to eight hours.

The iPod shuffle is best for sports enthusiasts because it's cheap, hardy and can clip onto pretty well anything. Those with smaller music libraries will also appreciate the value of an inexpensive device that is still powerful thanks to the voiceover feature, as will everyone who don't want to spend a lot on a music player.

The iPod nano is ideal for those who want a svelte device with more capacity than a shuffle.

The iPod touch has a higher price tag and in many ways strays rather too close to the smartphone world to make it a compelling device for those who already own an iPhone. If you do want an internet-capable iOS device, then you can

pick up an iPod touch for less than the price of an iPad. The iPod touch is also a great option for teenagers who want to communicate with friends, watch the latest YouTube videos, listen to their music, and not have ongoing bills for their parents to pay.

Price

If you really don't want to spend a great deal on a device, and don't mind a limited set of functions, then the iPod shuffle is a very tempting option at £40. Moving up to an iPod nano will give you a few more advanced features and eight times the storage, but the price jumps up to £129. For iPod royalty, you'll find the three models of iPod touch priced at £159 (16GB), £199 (32GB) and £249 (64GB).



Which iPad and iPhone?

HOW TO CHOOSE THE iOS DEVICE THAT WILL SUIT YOU

With four iPhones and five iPads to choose from, each with very different specs, it can be tricky to decide which iOS device to buy.

Those who want a 'phablet' experience – midway between a phone and a small tablet – might be interested in the iPhone 6 Plus. Fans of gaming and movies will also like the 6 Plus's big screen. Some business users may find the big screen good for productivity apps. The 6 Plus is likely to be the phone of choice for early adopters and others who like to have the latest thing, and for those on a big budget.

If the iPhone 6 Plus is a bit too big (and more than a few buyers have found this), then you might go for the smaller iPhone 6. It still has appeal for those who want a bigger screen (for games and films in particular, but also work apps and a generally more immersive experience) but a more portable device. The iPhone 6 is easier to slip into a pocket (and to use one-handed) than the iPhone 6 Plus. It's also a bit more affordable.

But what if you don't want the iPhone 6 with its 4.7in screen or the iPhone 6 Plus with its 5.5in screen? The iPhone 5s misses out on a lot of the features in the newer iPhones, including the latest processor, various camera features including 43Mp panoramas, the ability to use Touch ID in-store (when Apple launches Apple Pay in the UK), better battery life and

more. But if the smaller screen size is crucial, then it's still a good phone. And it does feature Touch ID (albeit without the NFC chip that will enable Apple Pay on your high street). It's a good deal, especially the 32GB version.

There are various features that the iPhone 5s has that the iPhone 5c doesn't, like the Touch ID fingerprint scanner and a better camera with better photography features. It's the cheapest iPhone, but it's not necessarily the best deal, crippled as it is by its 8GB drive.

The step up from iPad Air 1 to iPad Air 2 brings a faster processor, a better rear-facing camera (8Mp, up from 5Mp) and Touch ID, as well as a device that is 6 percent lighter and 19 percent thinner, with a less reflective screen and the prospect of iOS update support for about a year more than the iPad Air 1. Is all that worth an extra £80? Probably.

The iPad Air 1 is still a great iPad, though, fast enough for all current apps. Those who have light use in mind (email, browsing the web, simple games) should be absolutely fine with it, and would save the extra £80. However, such customers might want to consider a cheaper option still: the iPad mini.

The first and most obvious thing to say is this: £80 extra for the iPad mini 3 (compared with the equivalent mini 2) is a tough sell. All you get for that is Touch ID, and while Touch ID is cool and convenient, it's hardly worth £80.

The £40 price gap between the mini 1 and mini 2, by contrast, seems if anything to be smaller than we'd expect, and we strongly recommend going for the mini 2 rather than the mini 1. For the extra £40, the mini 2 gets a much faster processor than the mini 1 and a Retina display, and those are both major selling points – the A7 is more important than ever, given how

much apps have moved on in the past year (it's a must-buy if you're seriously into iPad gaming).

The A5 processor in the iPad mini 1 is only going to get more and more tired when tackling games and demanding apps.

It is also possible that the original iPad mini will become obsolete in the next couple of years – unable to update to the next version of iOS. If that happens you won't be able to run all the apps out there.

Also, if you're used to Retina displays already – you've got an iPad 4, say, or you borrow a friend's iPad mini 2 a lot – then you might find the iPad mini 1 a tiny bit fuzzy.



Apple TV

APPLE'S SET-TOP BOX

The Apple TV is a connected set-top box, measuring 23mm by 98mm by 98mm and weighing 27g, that offers access to iTunes TV shows and movies, as well as content from Netflix, YouTube and Vimeo. You can also stream content to your TV from your Mac, iPhone and iPad. It costs £59.

The Apple TV isn't a TV in the normal sense of the word, because it doesn't have free-to-air channels or a digital video recorder to store shows to watch at a more convenient time. However, it does offer what could be described as channels, and this content keeps on growing, leaving us hopeful for a future where the Apple TV will include links to on-demand services just like our iPhones and iPads do – think the iPlayer and 4oD apps and you're not too far away.

Apple has made multiple updates to the Apple TV software over the years, adding a number of new app-style TV channels, delivering new content to Apple TV users. Most recently the Now TV app addition brought Sky entertainment, movies and sports content to the Apple TV, for a subscription.

Probably the most popular app on the Apple TV is Netflix. In many ways it's the only reason we recommend the Apple TV right now, because without it there would be very little content available to UK users. When a Netflix subscription costs just £5.99 a month, it is very difficult to recommend spending almost that much on hiring a single movie to watch via Apple's own iTunes Store, although you will find some iTunes content that won't appear on Netflix for months or years – or maybe not at all.



In the US the Apple TV includes Hulu Plus, HBO Go, Showtime Anytime, Fox Now, Watch ABC, Disney Channel, Disney XD, Disney Junior, PBS, A&E, History, Lifetime, WatchESPN and much more.

It is possible to run apps for some services on an iPhone, iPod Touch or iPad and then stream them to the Apple TV using AirPlay – but the Apple TV really needs to provide direct access to those services without requiring any expensive additional hardware.

Despite the limited content here in the UK there is still a lot to like about the Apple TV. It's well built and easy to use. Some of the better features work only with other Apple products, but if you own those products then the Apple TV is a great addition.

We like the Apple TV's user interface too. It's simple and intuitive, as you'd expect from Apple, and will be familiar to all iPad and iPhone users as it utilises the bright and bold iOS looks. You navigate the setup menus and input Wi-Fi network and password via the included Apple TV remote or using your iPhone and the Remote app. You can also pair it with a Bluetooth keyboard. Using the keyboard

of the iPhone app simplifies the task of entering network passwords or using the search function when browsing content.

The Apple TV includes an HDMI interface with 1080p output for connecting to your high-def TV, as well as built-in Wi-Fi for your home network. There's no hard drive inside that tiny little box, so you can't download films or TV programmes for permanent storage, but you can download purchases onto a Mac or PC using iTunes and then stream them to the Apple TV using Apple's AirPlay wireless technology. AirPlay will also allow you to stream video from any iOS mobile device.

New Apple TV on its way

The last time Apple updated the Apple TV was back in January 2013, and even then it was just a minor update. Speculation about a fourth-generation Apple TV has been mounting, and it's certainly possible that Apple is gearing up to launch a new Apple TV this year.

In the two years since the last Apple TV update, many competing products from rival companies have launched, so Apple really needs to get a move on if it wants to dominate the set-top box market.

This new Apple TV may be smaller than the existing one, and it may feature a new remote, be Siri-activated, or even, rumour has it, be controlled using Kinect-like gestures.

Other rumours suggest that the new TV could include access to the iOS App Store so that users can purchase apps that can be viewed on their TV set – as well as games that can be played on the Apple TV. Our biggest wish, though, is that Apple brings the UK on-demand channels to the Apple TV – all its competitors offer them and their absence represents a serious failing on Apple's part.

Hopefully, any new features coming to the Apple TV will work on the current model as well as any new one that Apple launches.



Apple Watch

APPLE REINVENTS THE SMARTWATCH



Apple unveiled the Apple Watch back in September 2014, and finally went on sale on 24 April 2015.

The best news here is that Apple's not just launching a smartwatch but a whole raft of smartwatches. By combining the three different Apple Watch categories, the two different face sizes, and the accompaniment of straps, there is the potential for 38 different Apple Watches, so there will be a style to suit anybody. And crucially, since Apple is offering two watch face sizes, the Apple Watch will be as comfortable on a female wrist as it is a man's.

Where other companies have failed to come up with a smartwatch design that suits anyone, Apple has solved the issue by coming up with multiple designs to suit everybody.

Rather than try and make one watch to suit everyone, Apple has designed three basic Apple Watch varieties targeted at different groups of people. Starting at £299, the Watch Sport, for example, is ruggedised and has a strengthened Ion-X glass face so it should be able to take some bashing. It's also the lightest of the three Apple Watch editions because its case is made from anodised aluminium. The Watch Edition is clearly designed for the fashion-conscious, with a beautiful 18-carat gold case available in yellow or rose gold; it even comes in a fancy leather box that doubles as a charging cradle. Prices start at a staggering £8,000.

The watch face itself comes in two sizes: one is 42mm high, the other 38mm. The sapphire (for the Apple Watch and Watch Edition) or Ion-X glass face (for the Apple Watch Sport) sits in a case made from stainless steel, aluminium or gold, depending on which of the three models

you opt for (Apple Watch, Apple Watch Sport or Apple Watch Edition, respectively). The stainless steel finish is available in standard or black, the aluminium finish in silver or grey, and the 18-carat in yellow gold or rose gold.

There is also a collection of straps to choose from, including link bracelet, sport band, leather loop, classic buckle, modern buckle and Milanese loop. The leather loop and sport band options are offered in multiple colour choices. The sport band comes in black, white, pink, blue and lime green, for example.

And if that's not enough customisation options for you, there are a number of watch faces to choose from – some are even animated. And you can change the colours and design elements of these.

The problem that many of the current smartwatches have is that the user interface is packed into a tiny display and you need to manipulate those titchy visual elements using your fingers – which are inevitably bigger than the elements you are trying to touch.

Apple's solution is to make use of the stud on the side of the watch that was once used to wind up clockwork watches. This stud – its proper name is the crown – has been turned into what Apple calls a Digital Crown. This Digital Crown solves the problem of swiping through icons on a minuscule display. You can use the crown to zoom in on interface elements and scroll through content on the watch face, without your fingers obscuring the view. The Digital Crown can be used to navigate through lists as well as zoom in on data, maps and photos.

This doesn't mean that the watch face isn't touch-sensitive. You can tap and swipe the

Apple Watch face. In fact, the Apple Watch can determine just how hard you touched the screen. It can distinguish between a normal tap, used to select things, and a harder press, used to access contextual menus. Apple calls this technology Force Touch.

You aren't the only one doing the tapping when it comes to the Apple Watch. The watch incorporates what Apple calls a taptic engine, which lets it 'tap' your wrist to alert you to notifications. It's similar to the vibrate function on an iPhone, except that only you know that you are being nudged.

You can also interact with the Apple Watch via Siri, dictating messages or requesting turn-by-turn directions.

There will be various apps available for the Apple Watch. These are slimmed-down snippets of apps, referred to by Apple as 'Glances'. You will be able to glance at Messages, Mail, Weather, Calendar, Maps, Passbook, Music, Photos and more. Apple will also offer its own Activity app for the Apple Watch – it uses three circles to demonstrate how close you are to meeting your targets for calories burned – and a number of other health and fitness apps will also be available.

You will be able to use the Apple Watch to pay for things, just as soon as Apple launches its Apple Pay technology in the UK. All you do is double-click the button and hold up your watch to a payment reader. This is made possible because the Apple Watch includes an NFC chip, as do the iPhones 6 and 6 Plus. For added security, if you take the Apple Watch off, it'll lock and require a code before you can purchase anything.

Apple peripherals



AirPort Time Capsule

2TB £249, 3TB £349

The Time Capsule works with Apple's Time Machine app to make backing up your Mac really simple. It comes with 2TB or 3TB of storage and continuously makes a copy of everything on your Mac, backing up the files you've changed automatically, wirelessly, and in the background.

Full review: tinyurl.com/Lh6pjqu



AirPort Express

£79

Apple's AirPort Express is a Wi-Fi base station that also features the ability to stream audio from a Mac, iPad or iPhone to a stereo using AirPlay – kind of like an Apple TV for your stereo. It also works as a wireless access point to extend the range of a network but is only 802.11n-capable.

Full review: tinyurl.com/q4xqsqz



AirPort Extreme

£169

The AirPort Extreme is a Wi-Fi base station that combines the functionality of a router, network switch and wireless access point. You can also attach a hard drive to it for wireless network attached storage (NAS). It supports 802.11ac. Note that AirPort devices are routers, not modems.

Full review: tinyurl.com/mfdLLsc



Thunderbolt Display

£899

Introduced in 2011, Apple's Thunderbolt Display is almost four years old. It offers 2560x1440 resolution, 375cd/m² brightness, and a 1,000:1 contrast ratio. But it's more than a monitor – it offers three USB 2.0 ports, a FireWire 800 port, gigabit ethernet and, of course, a Thunderbolt port.

Full review: tinyurl.com/nkhkzm8



Magic Trackpad

£59

Apple introduced the Magic Trackpad back in 2010. It's similar to the trackpad on a MacBook, and it's designed to complement Apple's Wireless Keyboard as an alternative to a mouse. The Magic Trackpad's functions are practically identical to its laptop counterparts.

Full review: tinyurl.com/qd474vb



Magic Mouse

£59

Sounding a bit like a kid's superhero, the Magic Mouse is a multi-touch Bluetooth mouse that lets you click anywhere, scroll in any direction and perform gestures like you do on the Trackpad. It's a bit more precise to use than the Magic Trackpad and is included with every new iMac.

Full review: tinyurl.com/nc9o95e



Apple Wireless Keyboard

£59

Like the Magic Mouse, the Bluetooth-enabled Apple Wireless Keyboard is available with every new iMac. Its use doesn't stop with the Mac, though. Apple's Wireless Keyboard can be paired with an iPad, iPhone or an Apple TV to make entering data easier on those devices.

Full review: tinyurl.com/kuoa86k



Apple Keyboard

£40

There is also a wired keyboard available for those who prefer not to be constantly looking for batteries. It features a numeric keyboard, which is handy if you are often working with data. We love the Apple keyboards because they are quiet to use and the low profile helps avoid RSI.

Full review: tinyurl.com/px5rj8c



Apple EarPods

£25

Designed according to the geometry of the ear, Apple's EarPods are more comfortable for many people than other earbud-style headphones. A built-in remote lets you adjust the volume, control the playback of music and video, and answer or end calls with a pinch of the cord.

Full review: tinyurl.com/mmvo52c



Apple In-Ear Headphones

£65

Apple says its In-Ear Headphones with a mic and remote are "engineered for superior acoustic accuracy, balance and clarity". Each earpiece contains two dedicated drivers – a woofer to handle bass and mid-range, and a tweeter for high-frequency audio. If you prefer in-ear headphones – which tend to let less sound leak, so you don't have to blast the sound out as high – these could be a good option.

Apple software



OS X 10.10 Yosemite

Free

The latest version of Apple's operating system for the Mac launched in October 2014 with a completely new look. Benefits of the new OS include better continuity between your iPad, iPhone and Mac, with features such as AirDrop and Handoff making it easier to move between devices.

Full review: tinyurl.com/ohv23hs



iOS 8

Free

Apple introduced iOS 8 in September 2014. The new operating system for iPad and iPhone brought a way to share content with your family and iCloud Drive, making it easier to store and access data in the cloud. Other additions include extensions, improved keyboard and the Health app.

Full review: tinyurl.com/kmavwnw



Final Cut Pro X

£229.99

Final Cut Pro X is Apple's professional video editing suite. You can work with multiple streams of 4K ProRes at full resolution, play back complex graphics and effects in real time without rendering, output 4K video to ultra-high-definition displays, and create 3D titles.

Full review: tinyurl.com/phs7zc7



Logic Pro X

£149.99

Apple's Logic Pro X is Apple's professional music creation software. It includes a huge collection of instruments, effects and loops, as well as drummer tracks. It's aimed at professionals but is also a great step up from GarageBand for those who want to get serious about music creation.

Full review: tinyurl.com/nfgavnz



GarageBand

Mac £3.99, iOS £3.99

This music creation software is available for both Mac and iOS. It offers a complete sound library with software instruments and virtual session drummers. You can learn to play an instrument as well as play, record, create and share your hits. Free with new Macs and iOS devices.

Full review: tinyurl.com/nk5srLq

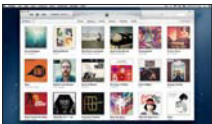


iMovie

Mac £10.99, iOS £3.99

This home movie making software is available for iPhone, iPad and Mac. You can create an HD movie, or quickly put together a Hollywood-style trailer. It's an easy way of turning the video you take on your iPhone into something you'd want to share. Free with new Macs and iOS devices.

Full review: tinyurl.com/pc7xp3e



iTunes 12

Free

Apple's iTunes was originally music jukebox software that came into its own with the launch of the iPod. Since then iTunes has grown and is now the means by which users can manage all their media: music, movies, apps and more. Use iTunes on a Mac to access the iTunes Music Store.

Full review: tinyurl.com/kj32hvu



Pages

Mac £14.99, iOS £7.99

Pages is Apple's answer to Microsoft Word (and is compatible with Word). It's a word processor for Mac and iOS that works seamlessly between the different devices. In many ways it's more of a page layout application for creative people, with more design-led features than Word.

Full review: tinyurl.com/qfdzjfc



Keynote

Mac £14.99, iOS £7.99

Keynote is a presentation app for Mac and iOS that is basically Apple's answer to PowerPoint. It features really easy-to-use tools, some great effects, animations and transitions for creating attractive presentations. You can save Keynote documents as PowerPoint files if you wish.

Full review: tinyurl.com/nz3q3uf



Numbers

Mac £14.99, iOS £7.99

Apple's answer to Excel is Numbers, a spreadsheet app that can be used on both Mac and iOS devices. Because it's Apple, Numbers lets you turn your data into a thing of beauty, dropping your figures onto one of Apple's templates, but it also does the maths, supporting over 250 functions.

Full review: tinyurl.com/o5qnk4g

Jony Ive 'semi-retired' into new role

Semi-retired away from the pressures of commercial design, Apple's Sir Jonathan Ive has a new role

Apple's legendary designer Sir Jonathan Ive has been promoted to Chief Design Officer. As I write this, Apple still lists him as Senior Vice President Design on its corporate executive profile pages, but he let slip to (of all people) British comedian, actor and TV host Stephen Fry that his new business card now reads Chief Design Officer.

This news was confirmed by Apple news blog 9to5Mac, which published an internal email from Apple CEO Tim Cook announcing the new job title and subsequent promotions within Ive's team.

I suspect that, despite the similar title, his new wider brief masks a massive shift in his hands-on position at Apple.

Ive's position at Apple – he is certainly number two in the executive hierarchy given his importance, public persona and former close relationship with former CEO and all-time Apple chief Steve Jobs – means he doesn't need a new job title. He has already been described (by his predecessor Robert Brunner) as the "creative soul" of Apple.

It's not like he's polishing his LinkedIn profile as much as his beloved sheets of aluminium. He seems devoid of ego, so hasn't demanded the word 'Chief' appear in his job title rather than the word 'vice'.

There have been several rumours that Ive has considered quitting Apple for an easier life, or at least more time away from the studio in Cupertino, and the pressures of constant commercial success.

Steve Jobs's widow, Laurene Powell Jobs, thinks he finds the pressure of always creating best-selling products: "Jony's an artist with an artist's temperament, and he'd be the first to tell you artists aren't supposed to be responsible for this kind of thing."

So his new job title means a new, wider, looser role, and maybe one with



a lot less pressure and more creative fun. And, possibly, more time in his native Britain, where people will be properly forced to doff their caps at his royal majesty.

Does Jony really need to come into work each day and dream up tiny iterative changes to the designs of the iPhone, iPad or MacBooks? Now the Apple Watch is out, does Apple need him to be the person to design it thinner? In fact, does Apple do anything but make existing hardware thinner?

Cook says that "As Chief Design Officer, Jony will remain responsible for all of our design, focusing entirely on current design projects, new ideas and future initiatives."

From 1 July, he will pass his day-to-day managerial responsibilities of Industrial Design and User Interfaces to members of his 19-strong design team – most notably Richard Howarth, the new vice president of Industrial Design, and Alan Dye, Apple's new vice president of User Interface Design.

This tells us it takes two people to cover Ive's workload and responsibilities, and that suggests the pressure he's under – and his desire to escape. He freely admits that he's not the perfect

person for administration and management. He told Fry that he needs more time to "think freely".

It seems highly likely that Ive will return to Britain where, of course, he can work closely with London-based Foster and Partners, the architects of Apple's new spaceship HQ and some of the company's many Apple Stores. The HQ's new oak chairs and desks will all, reportedly, bear Jony's signature. Furniture design isn't new to Ive – in the past he even designed a toilet – and it's almost the pinnacle for design credibility to have a chair named after you.

So Ive is being semi-retired to focus on the softer parts of Apple (not that an oak chair sounds that soft), away from the massively commercial, and away from the USA. He can design elements of the new Apple HQ in Cupertino, maybe the curve of the desks of the Genius Bar in the Apple Store. Or sketch out drafts of entirely new Apple products (the Apple television is now looking unlikely, but how about the Apple Car?), rather than another longer, thinner iPhone 7.

In effect he's being "kicked upstairs", away from the day-to-day pressure, and back to the more fun, creative side of his profession. Apple keeps one of its public figureheads, and Jony gets to kick back a little. He remains as its creative soul, and on hand at the company's launches to purr his design gentility on the product mystique.

Of course, I might be wrong, and Ive will still be banging his head on a polished marble table at the design of the underside of the second Apple Watch's charger packaging.

No-one would blame him more time to be truly creative, and maybe help Apple come up with the next brilliant new thing, or just have fun and let his trusted team fret about the minor updates.

Sell or buy an iPad, iPhone, MacBook or iMac with Macworld's mResell



Macworld would like to introduce you to mResell, our Apple-trusted site that helps you sell your old Apple products and buy refurbished ones.

Our service will help you get a great price in a safe and secure way for both new and old Apple products. For added piece of mind, all refurbished devices bought through the store come with a product warranty. But don't just take our word for it – get an instant, no obligation quote now.

Enter your Apple serial number now:

mresell.macworld.co.uk

mResell Macworld



Authorized
Reseller

NOW YOU CAN AFFORD A BRAND NEW MAC



LESS THAN
£2 PER DAY



YOU DO THE MATHS

ALL OUR FLEXI-LEASE PACKAGES INCLUDE:

MAINTENANCE

- **3 Years** full cover for all hardware with remote and telephone support, plus loan equipment

LEASE RENEWAL

- after only **2 years** we will offer you a renewal to latest equipment and options to keep or return the old machine

OWNERSHIP

- at the end of the lease the equipment is yours for just **£1**

020 7111 1643
WWW.HARDSOFT.CO.UK

HARDSOFT
Established for over 25 years